VOL. XL. No. 3 MARCH 1955

# MECCANO MAGAZINE

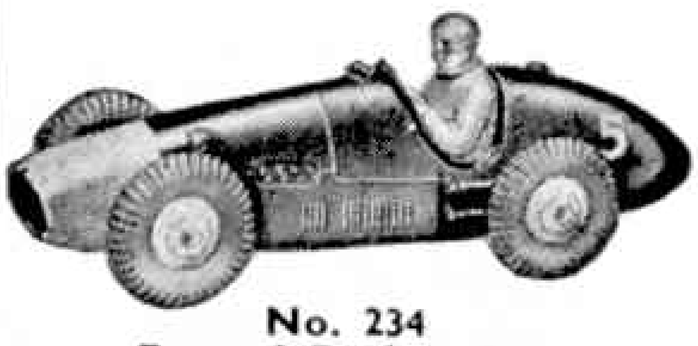
A MASERATI AT OULTON PARK

1/-

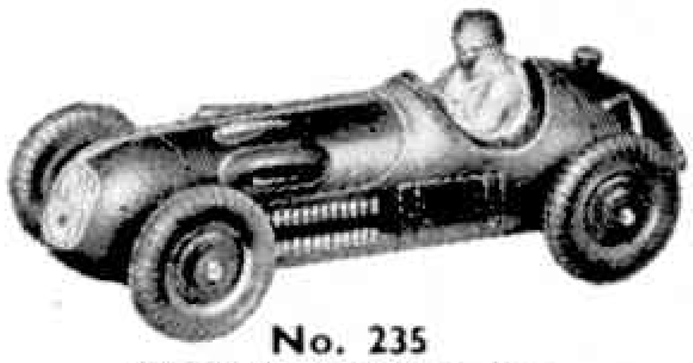
# DINKY TOYS

TRADE MARK REGD

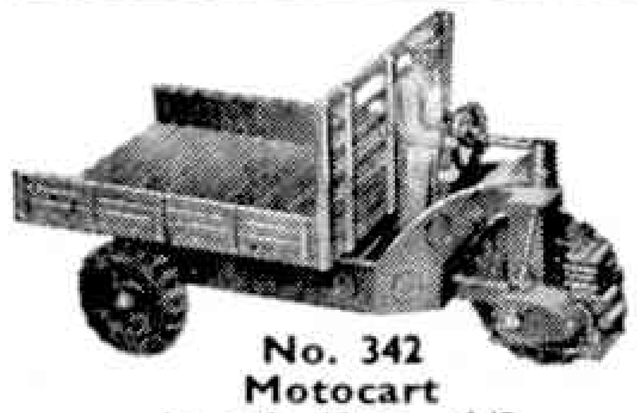
## This month's new DINKY TOY is illustrated on the back cover —IN COLOUR!



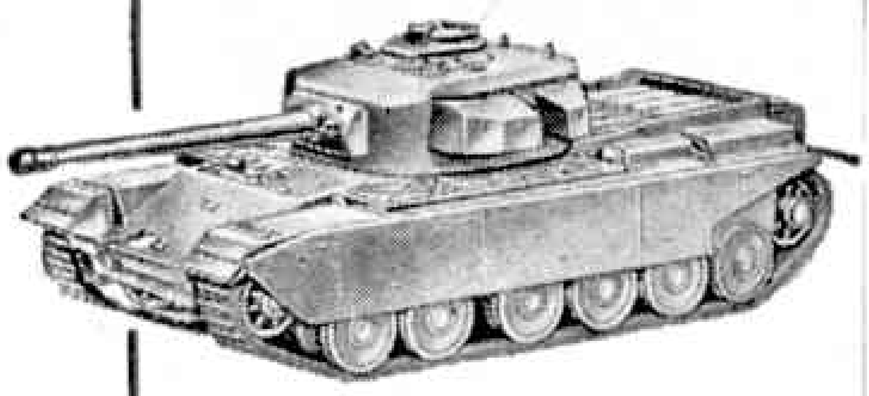
**No. 234**
**Ferrari Racing Car**
Length 4 in. **2/6**



**No. 235**
**H.W.M. Racing Car**
Length $3\frac{7}{8}$ in. **2/6**



**No. 342**
**Motocart**
Length $4\frac{3}{8}$ in. **4/3**



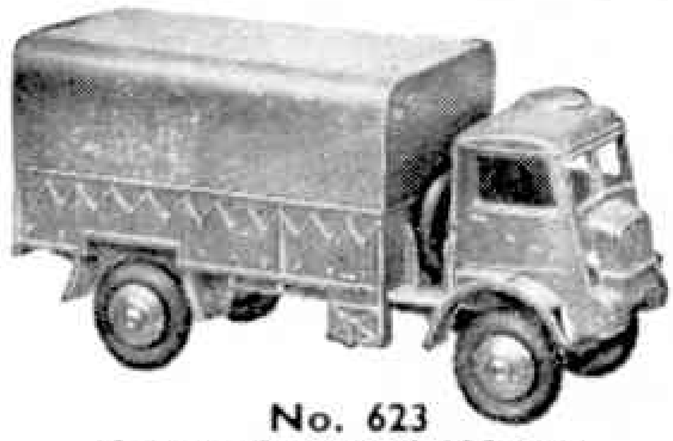
**No. 651**
**Centurion Tank**
Length 5 in. **7/11**

**No. 621**
**3-Ton Army Wagon**
Length $3\frac{3}{8}$ in. **5/3**

**No. 154**
**Hillman Minx**
Length $3\frac{1}{2}$ in. **2/6**

**No. 172**
**Studebaker Landcruiser**
Length $4\frac{1}{4}$ in. **2/9**

**No. 470**
**Austin Van "Shell/B.P."**
Length $3\frac{1}{2}$ in. **2/9**



**No. 623**
**Army Covered Wagon**
Length $3\frac{7}{8}$ in. **4/–**

**No. 673**
**Scout Car**
Length $2\frac{8}{8}$ in. **3/–**

**No. 700**
**Seaplane**
Wing Span 4 in. **1/5**

**No. 410**
**Bedford End Tipper**
Length 4 in. **5/3**

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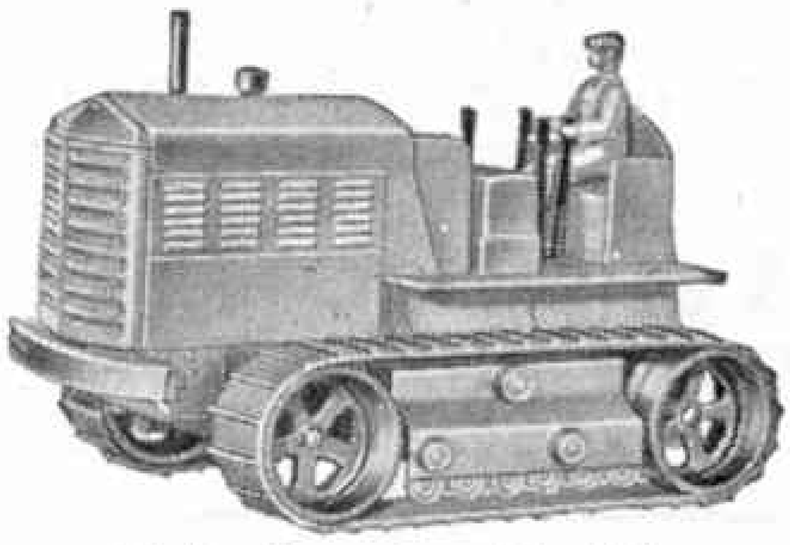
# DINKY SUPERTOYS

Seventeen of the largest models previously included in the Dinky Toys range have now been re-classified as Dinky Supertoys. These are listed below, and new Dinky Supertoys will be introduced from time to time.

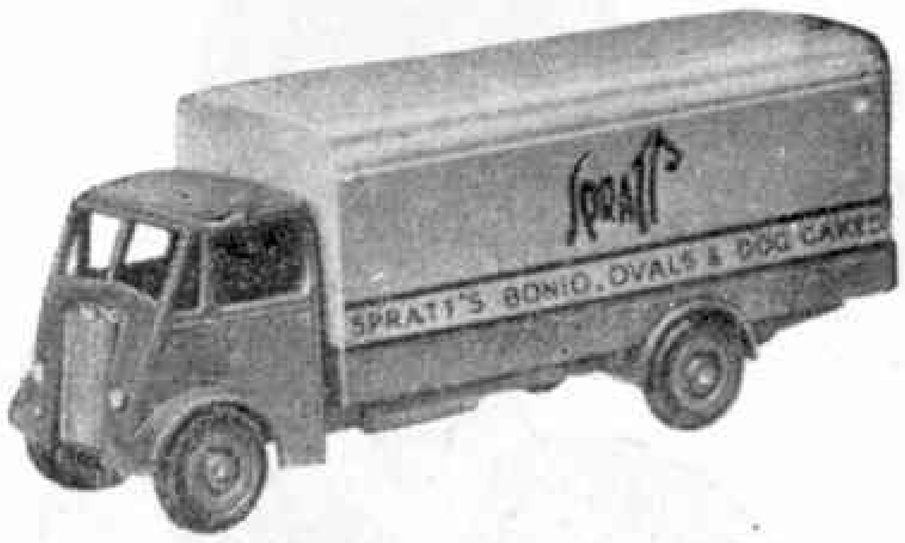
## DINKY SUPERTOYS

| No. | Description | Price |
|---|---|---|
| 901 | Foden Diesel 8-wheel Wagon .. | 7/9 |
| 902 | Foden Flat Truck .. .. .. | 7/3 |
| 903 | Foden Flat Truck with Tailboard .. | 7/3 |
| 905 | Foden Flat Truck with Chains .. | 8/9 |
| 917 | Guy Van SPRATTS .. .. .. | 7/6 |
| 941 | Foden 14-ton Tanker MOBILGAS .. | 9/6 |
| 955 | Fire Engine with Extending Ladder .. | 7/6 |
| 961 | Blaw Knox Bulldozer .. .. | 13/- |
| 962 | Muir-Hill Dumper Truck .. .. | 7/- |
| 963 | Blaw Knox Heavy Tractor .. .. | 7/9 |
| 964 | Elevator Loader .. .. .. | 17/6 |
| 971 | Coles Mobile Crane .. .. .. | 10/6 |
| 973 | Goods Yard Crane .. .. .. | 11/- |
| 981 | Horse Box .. .. .. .. | 15/9 |
| 982 | Pullmore Car Transporter .. .. | 16/6 |
| 991 | A.E.C. Tanker .. .. .. .. | 6/3 |
| 999 | D.H. Comet Airliner (previously 702) | 7/3 |

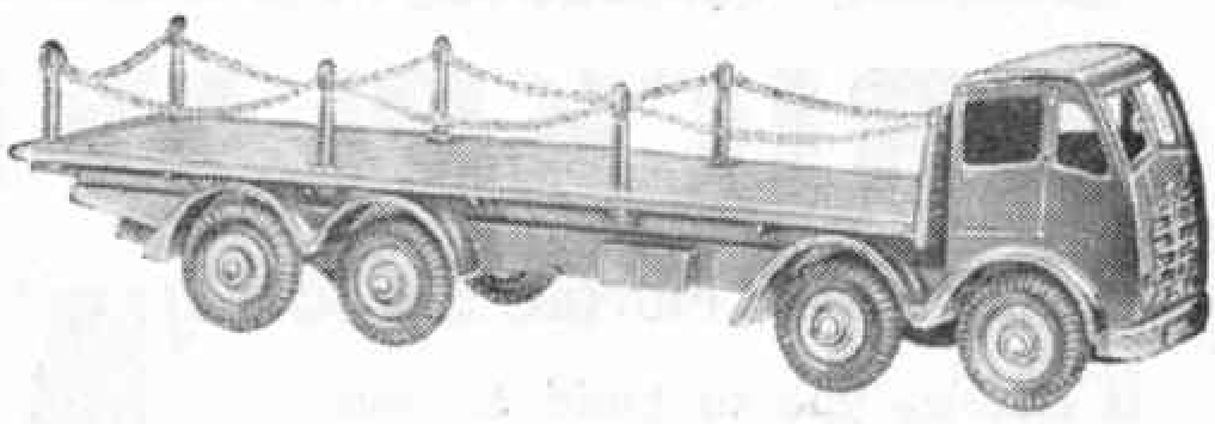


**Dinky Supertoys No. 963**
**Blaw Knox Heavy Tractor**
Length 4½ in. **7/9**
Runs on creeper track

**Dinky Supertoys No. 955**
**Fire Engine**
**with Extending Ladder**
Length 5⅝ in. **7/6**
The ladder mounting rotates and the ladder itself can be raised and extended




**Dinky Supertoys No. 917**
**Guy Van (Spratt's)**
Length 5¼ in. **7/6**



**Dinky Supertoys No. 905**
**Foden Flat Truck with Chains**
Length 7⅜ in. **8/9**

**Dinky Supertoys No. 982**
**Pullmore Car Transporter.**
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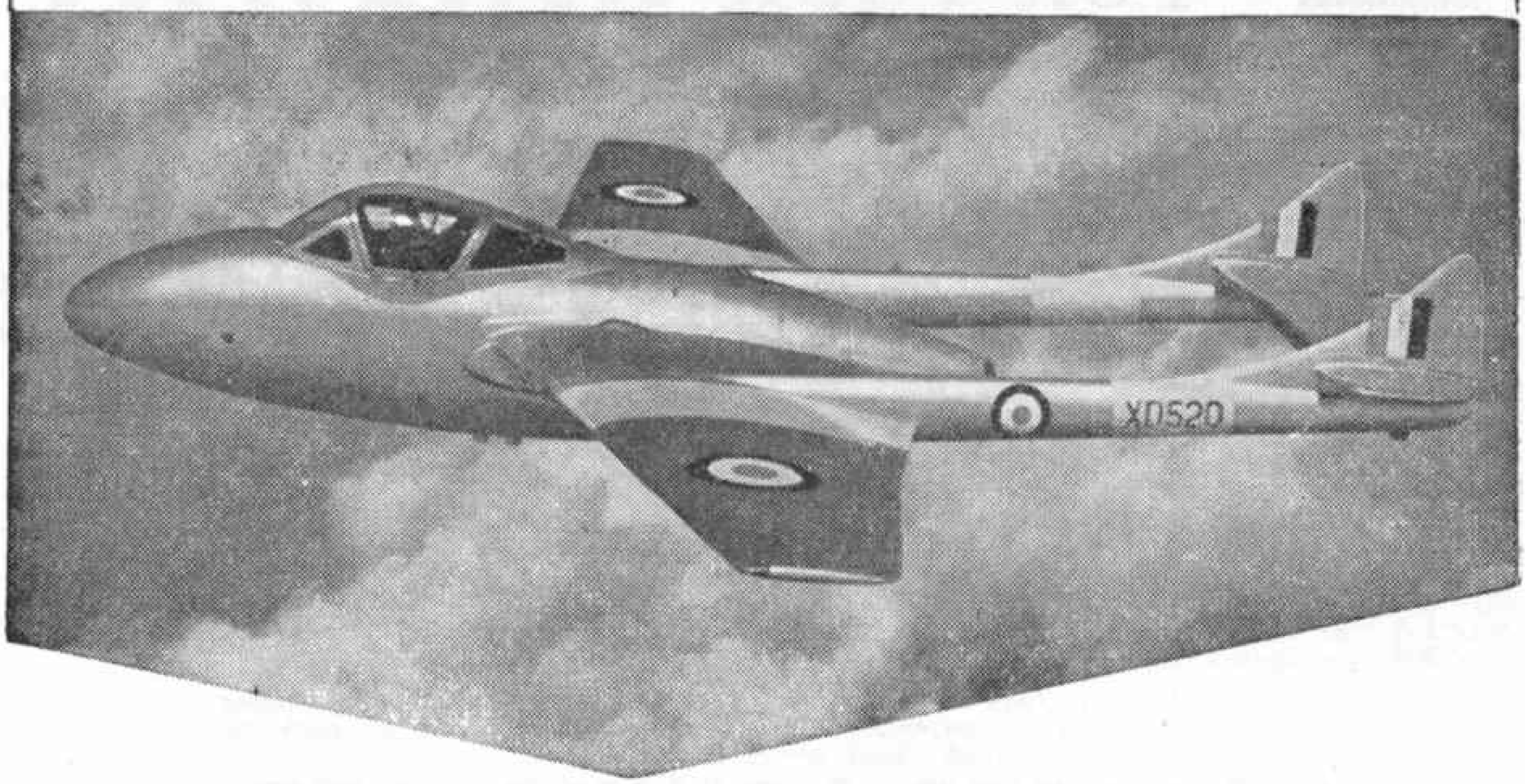


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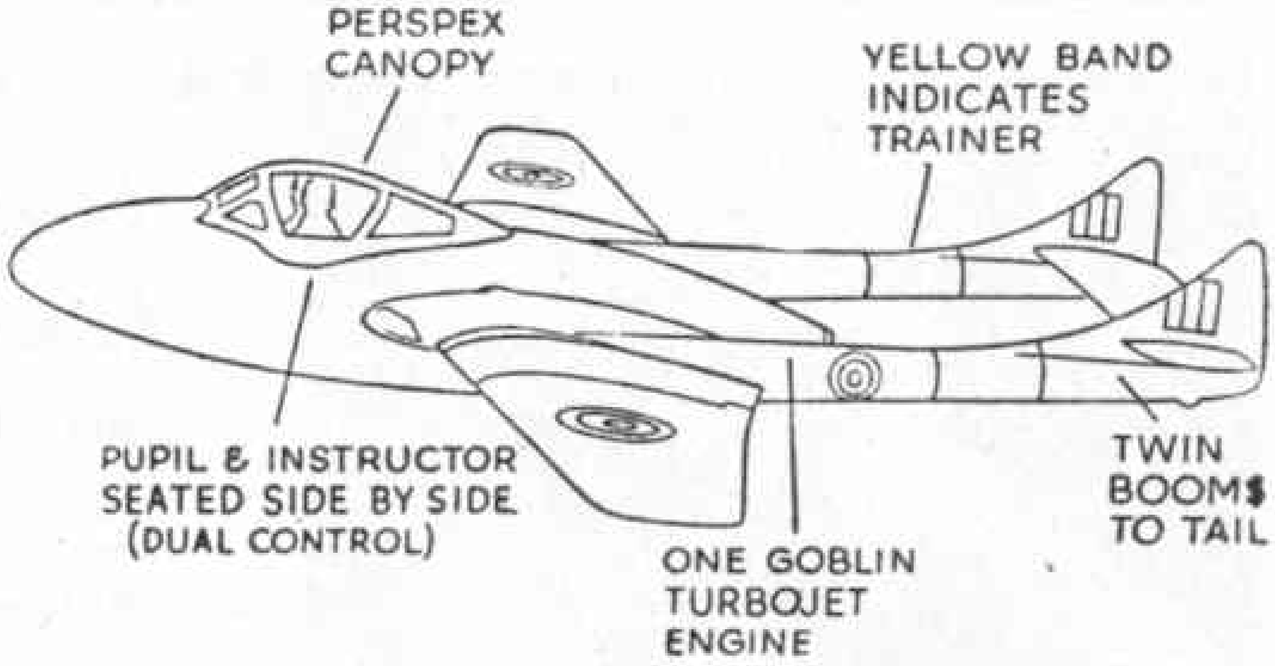
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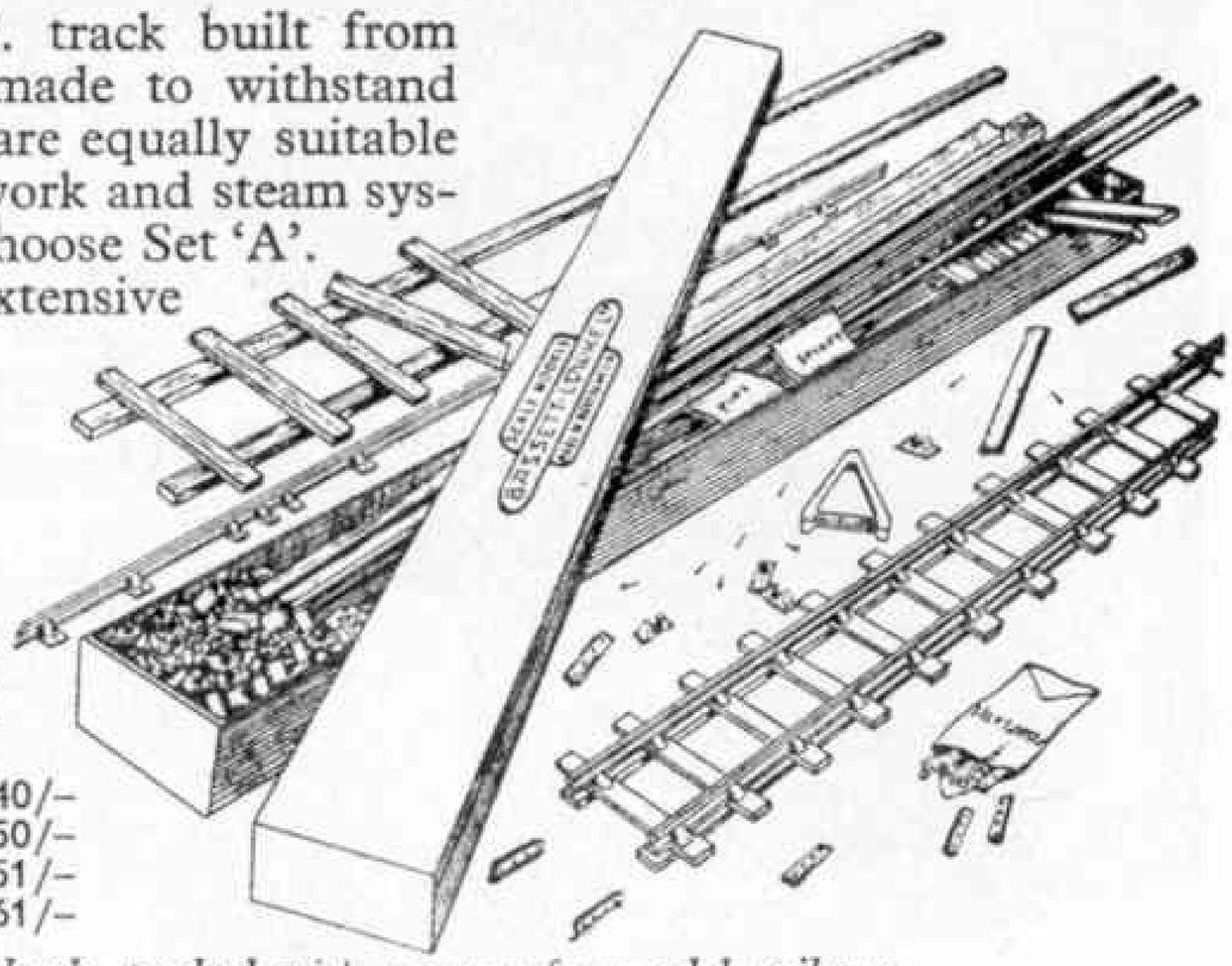

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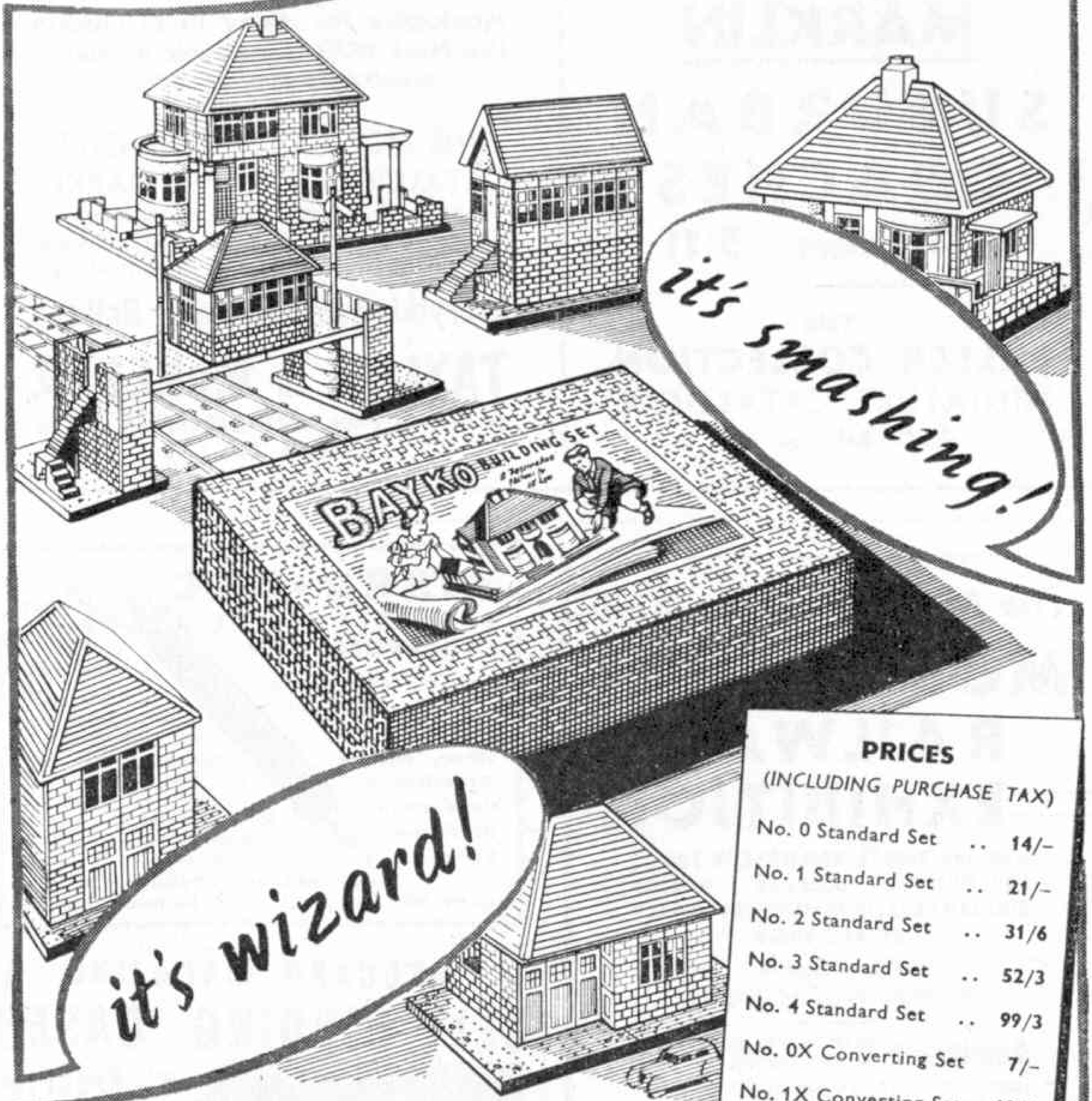


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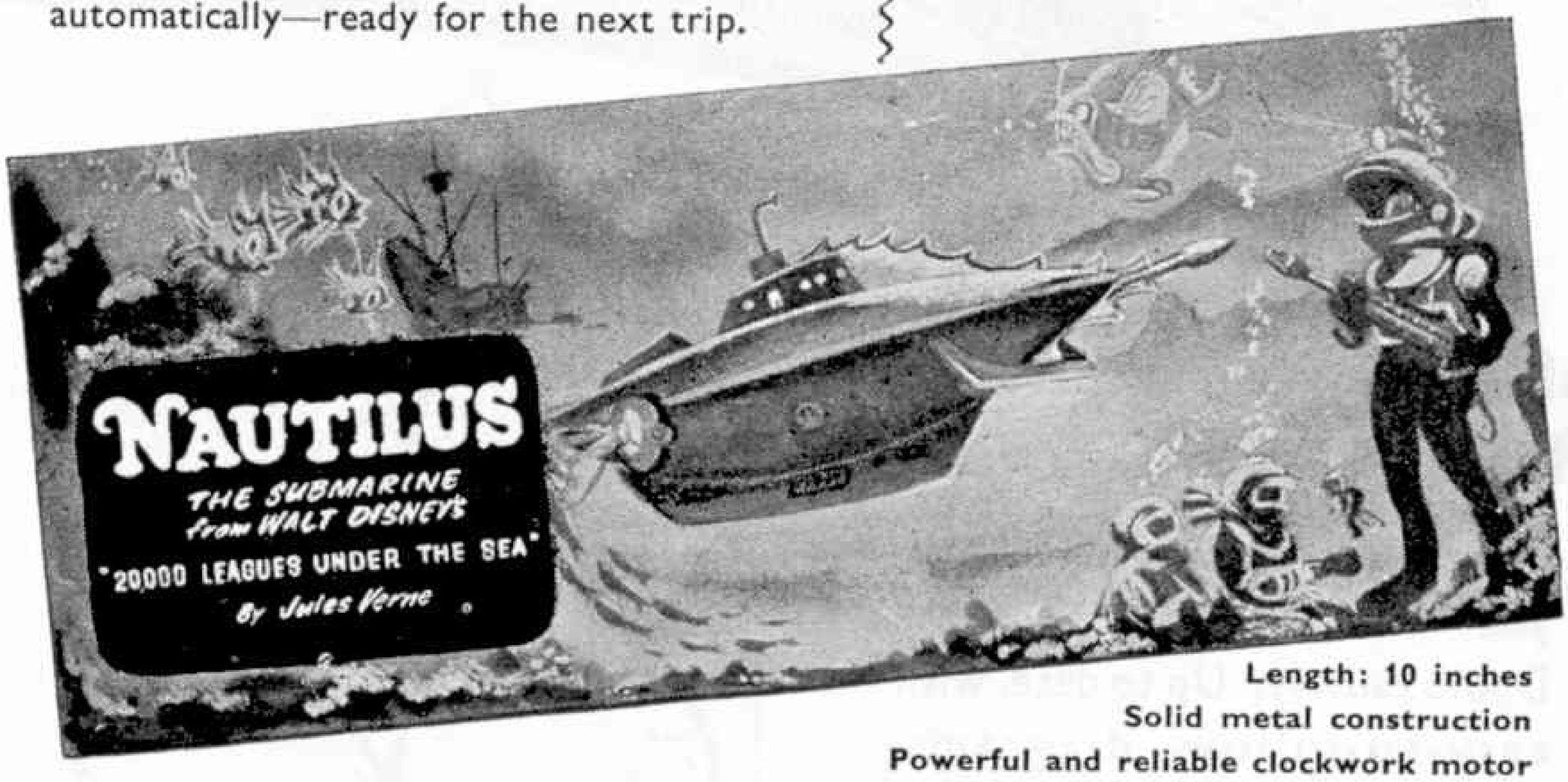


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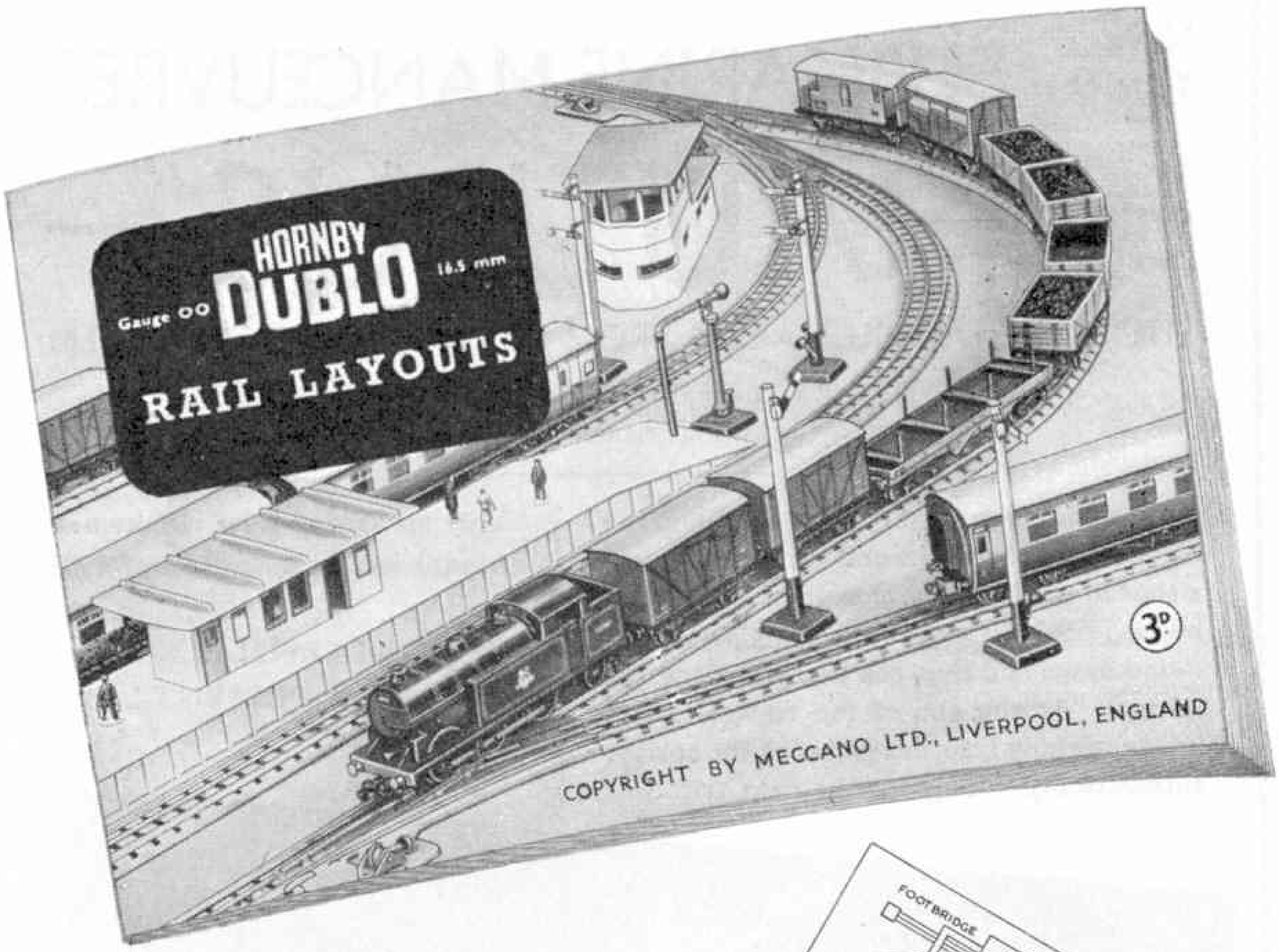


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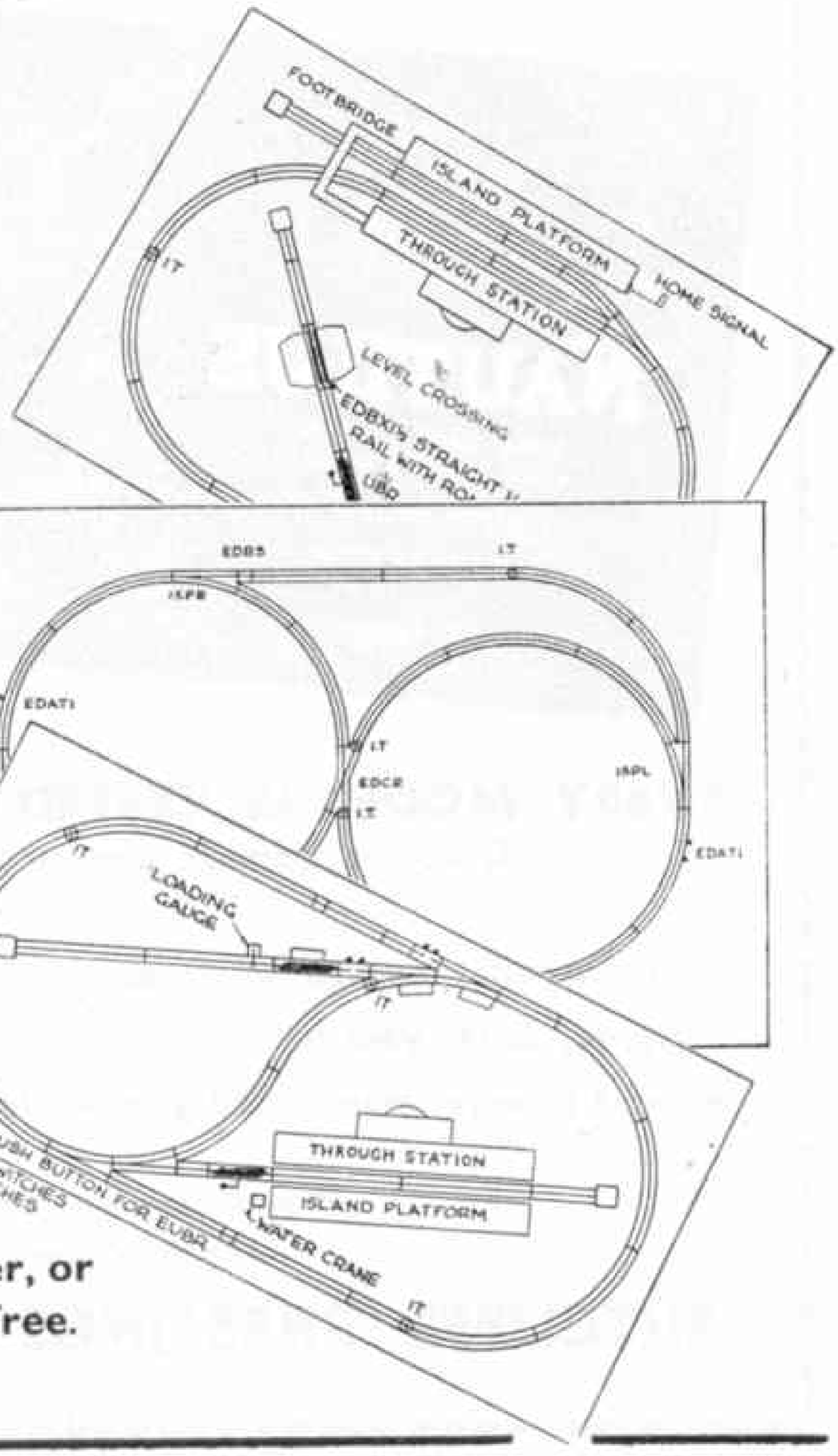


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**Next Month:** "EASTER CUSTOMS." By Reece Winstone


# MECCANO MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

EDITOR : FRANK RILEY, B.Sc.

Vol. XL
No. 3
March 1955


## The Way of Progress

There is an old story of a young man in the United States about 150 years ago who left the Patent Office in which he worked to take up an entirely different post. He thought that practically everything worthwhile had been invented by that time, and that his prospects therefore were poor.

**This must be one of the quaintest of street names. The street is a cul-de-sac off Berkeley Square, Bristol, and presumably the name is a warning that here there is no way of making progress. Photograph by Reece Winstone.**

This seems a rather absurd story, but after all, there are plenty of people about today who cannot really picture the future and are apt to think we have reached the end of the road. A good example of this, brought to mind by my use of the word road, is provided by our transport systems. In our cities electric tramcars replaced the cars hauled by horses and steam engines, and buses are now supplanting electric tramcars. I think many of us just look on this last form of transport as more or less final, but the bus too has a rival and a threatening one. I wonder how many of you know what it is. To find out we may look at the United States, where in places bus companies now seem to be following railways into financial and other troubles. Their enemy is the private car, which of course robs them of passengers.

So the bus is not the last word. Nor will the private car bring the line of progress to an end. Some of us may continue to walk and to use older forms of transport for a long time, but we may look forward to better helicopters and "flying bedsteads," and maybe other even stranger forms of transport in which atomic power will play a part. The way in which we use the latter too will surely change. Our atomic piles produce heat that is used to boil water and make steam, which in turn drives a turbine, which then drives something else; a dreadfully long-winded process, that in time must give way to something more direct not yet dreamed of.

The young man who thought everything worthwhile had been invented probably thought that there would be no chance to do wonderful things like those accomplished by the inventors, engineers and scientists of whom we read in books. Don't believe it!

*The Editor*

# Moss and His Maseratis in 1954

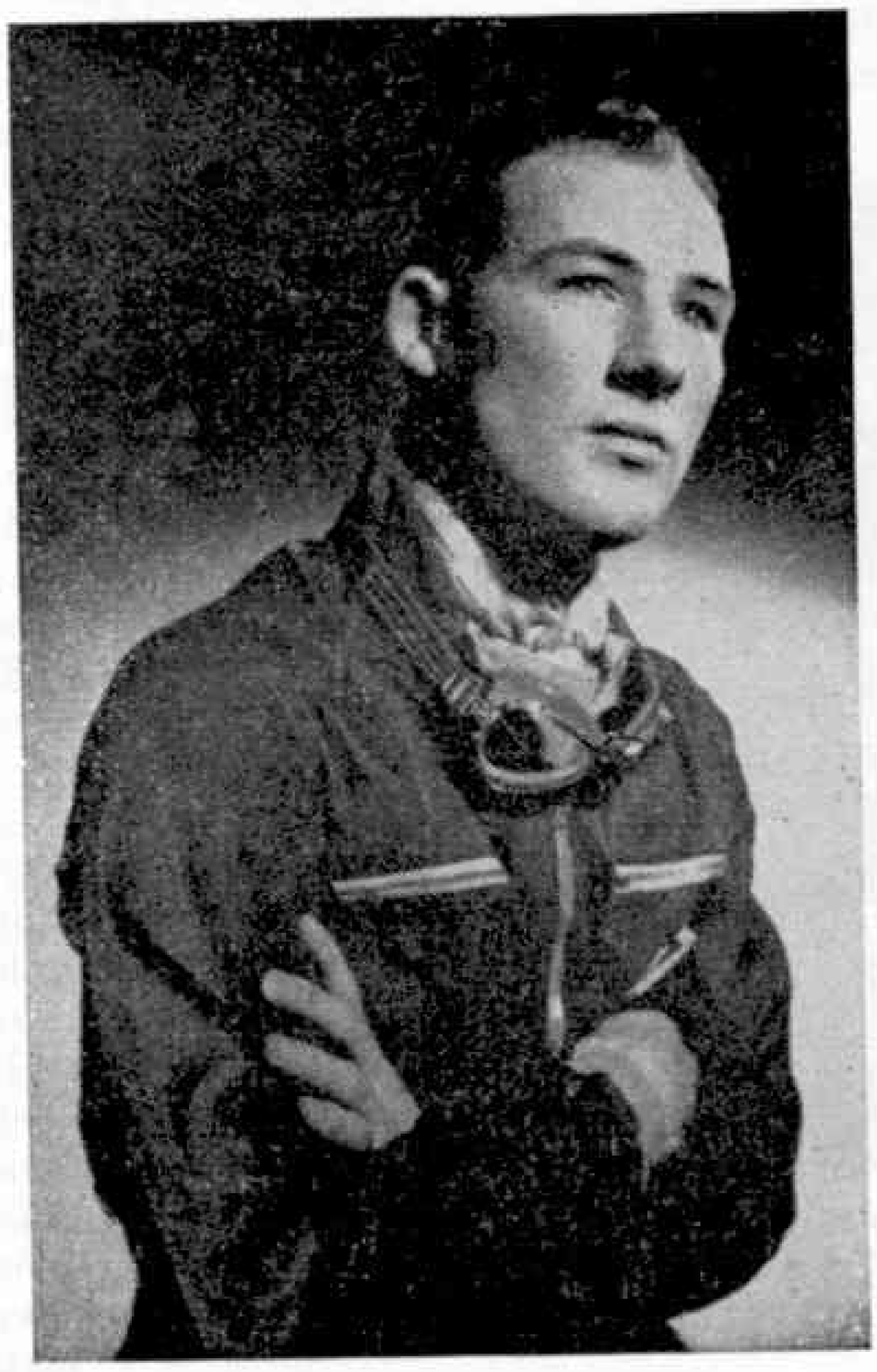
By the Editor

OUR cover this month, which is based on a photograph taken by W. R. Hamilton, Cheadle Hulme, a reader of the *M.M.*, shows Alf Francis, who is first mechanic for Stirling Moss, at work on the Maserati in which that great driver took part in two races at the Oulton Park International Motor Racing meeting organised by the Mid-Cheshire Car Club and the *Daily Dispatch* in August last. This car was not Stirling's own Maserati, in which he had won at Aintree earlier in the year. This had suffered engine troubles in a previous event, and the car seen on the cover is a special one that was flown over at short notice, so that Stirling could take part in this meeting.

The Maserati of course is an Italian car, and is seen painted red, the racing colour of Italy, but the nose of the machine is painted green, the English racing colour, in view of Stirling's own nationality. It is numbered 7. Stirling always takes this number whenever possible, as he likes it and thinks of it as his lucky number. The Maserati in which he raced at Aintree at the Spring and Autumn meetings of last year also was numbered 7. Another interesting point is that Stirling's cars always have on them a small Union Jack, an adornment on which he insists.

Flying the car over to this country from Italy, and the meticulous preparation that Alf Francis gave it, brought their full reward in the two events for which it was entered, for Stirling won both. The first was a 100-mile Formula 1 Gold Cup race, in which Stirling's average speed was 83.48 m.p.h. The second was a Formule Libre 75-mile event in which his average was 82.91 m.p.h. His full out speed on the course was about 140 m.p.h.

I last saw Stirling on the day before the Autumn Motor Racing meeting at Aintree, Liverpool. As we parted he asked me what kind of weather Liverpool had in store for the meeting next day. I immediately said that the afternoon would be fine and dry, and added that he himself would win all three of the races for which he was entered. He seemed amused. But the afternoon *was* fine and he *did* win all the events in which he took part.

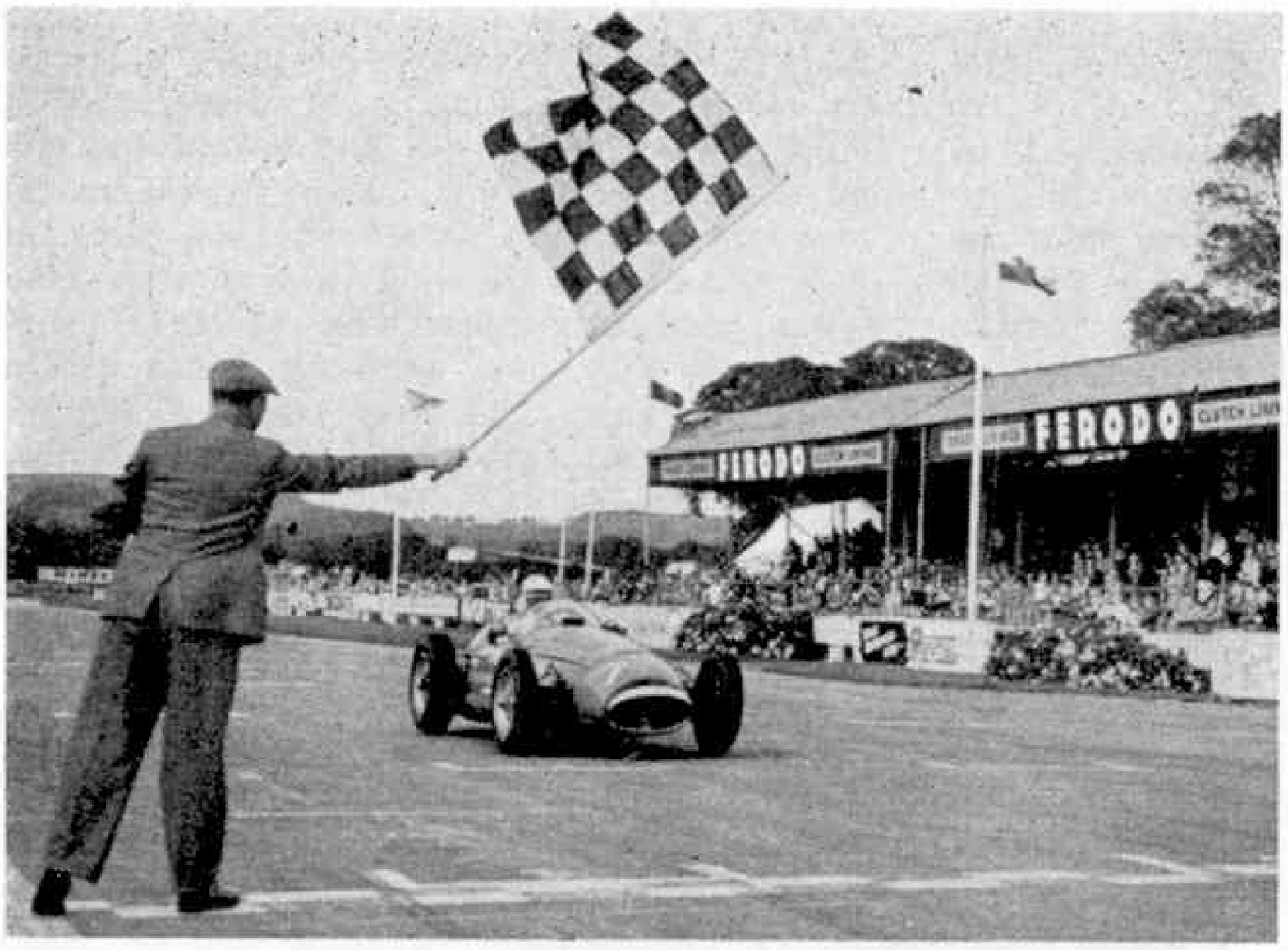


**A characteristic portrait of Stirling Moss, now ranked as one of the five greatest Grand Prix drivers.**

It was certainly Stirling's day at Aintree on 2nd October last. He was driving a Maserati in two of the races. One of these was the *Daily Telegraph* Trophy Race of 17 laps, in which he took the lead immediately and maintained it throughout, at the end leading Mike Hawthorn in the Vauxhall Special, his average speed being 85.43 m.p.h. The second was the Formule Libre Race, also of 17 laps, and in winning this event he set up a record for the Aintree course by completing the fastest lap, at 89.55 m.p.h.

The third race was in the 500 c.c. class, in which Stirling drove a Beart-Cooper Norton. Here again he ran right away from the field at the start and continually increased his lead, showing his remarkable style and capacity throughout.

Aintree looks like being a happy hunting ground for Stirling. So far only two meetings have been held there, the one I have just referred to and the opening meeting in May of last year. On the latter occasion he won the Formule Libre Aintree 200, the final of which consisted of 34 laps, in his Maserati, with the average speed of 77.7 m.p.h. Again he won the 500 c.c. scratch race in




**Moss crosses the finishing line in the Goodwood Trophy Race in September last, which he won at an average speed of 91.49 m.p.h.**

the Beart-Cooper Norton, his run including the fastest lap at 72.19 m.p.h.

Returning for a moment to the Autumn Aintree meeting, I wonder how many readers noted the remarkable eight days in Stirling's racing career that ended there. These began at Goodwood, on the previous Saturday, when the Autumn meeting of the B.A.R.C. was held. The big race of that day was the Goodwood Trophy, 21 laps, in which Stirling drove in his calm and easy fashion to finish in the lead, the average speed over this course being 91.49 m.p.h. He also made the fastest lap at almost 93 m.p.h. On that day he also scored two seconds and a third. The first of his seconds was in a 500 c.c. race, the second in a sports car race in which he drove a Lister-Bristol, and his third was achieved in the Woodcote Cup, in which he drove a Maserati. Incidentally, he made the fastest lap in the first two of these three races also, and in the 500 c.c. race he created a Goodwood lap record for cars of that capacity, 83.88 m.p.h.

**An exciting moment. Moss taking the lead from Ascari in the 1954 Italian Grand Prix Race at Monza. A leaking oil tank robbed him of victory with only 10 laps to go.**

Now just look back over these events, and you will realise that he won races at first class meetings in three widely different types of car, namely the 500 c.c. class, a sports car and the Maserati, a car designed and constructed with Grand Prix racing in view. Remembering also his achievements in such famous Rallies as the Monte Carlo and Alpine events, this shows that Stirling is no specialist, but is the complete motorist, capable of holding his own in all aspects of motor sport. His style and the ease of his driving make this possible. He understands cars, and is a master of the art of "taking them along" to get what he wants from them.

I am not sure that "driving" is the right word for this art, for it rather implies compulsion or force, and Stirling does not force his cars at all; he persuades them, with hands and feet that he moves thoughtfully and at exactly the right time to achieve what he wants in the most economical way, one that is calculated to allow the car itself to give full vent to its power. I suppose that there are racing drivers whose movements are violently energetic, and who themselves radiate an

air of power proportional to that of the cars they drive. But that is not the way of the masters.

To illustrate this let me take you to a race that Stirling lost, a race that to me reveals one of the qualities that lie behind his remarkable successes in the motor racing world. This was the Italian Grand Prix at Monza in September of last year, a race that calls for high speed and acceleration. In it Stirling was battling with such famous drivers as Fangio, in a Mercedes-Benz, and Ascari, both world champions, with Gonzalez, Villoresi, Mike Hawthorn and many others.

Driving steadily and easily, Moss eventually came into third place, within reach of the two leaders, Fangio in his Mercedes-Benz and Ascari in his Ferrari. At the half distance the latter was a second ahead of Fangio and behind these came Moss and Villoresi, also in a Maserati. The two latter moved up, and then Villoresi tackled the leaders, only to retire with his clutch out of order. Moss now took up the running. First he swept past Fangio and then on the 45th lap he passed Ascari, and once in the lead, with the two greatest drivers of the present age pressing him, he drove on completely at ease and unruffled.

Perhaps it is very easy to be unruffled when leading or winning, but how many of us can preserve calm when our hopes and expectations are suddenly crushed? With 10 laps to go, and still leading, 20 seconds ahead of Fangio, Stirling suddenly found that his oil pressure was falling. He pulled into the pit, more oil was hastily poured in and off he went again in pursuit of Fangio, who in the meantime had gone ahead. But oil was streaming out of the tail of his car, and before he could stop the engine seized. With victory seemingly in his grasp, he was out of the race.

What had happened was that an unsupported length of pipe flanged to the oil tank at the rear had cracked the tank at the flange. Otherwise the car was in perfect order, thanks to Alf Francis, who had assembled it himself.

There were no loud complaints or wailings from Stirling. He simply pushed his car up to the finishing line, and there waited calmly until the leader had completed the 80 laps of the course. Then he pushed it over the line, and so scored 10th place in this remarkable race. This was at a time when Stirling suffered two or three cruel blows of fate, but he took them all in the same calm and easy manner.

Fangio and Gonzales have had similar

**Stirling Moss talks to the crowd at the Autumn meeting at Aintree after winning the "Daily Telegraph" Challenge Cup, presented to him by Mr. George Simon, General Manager of the "Daily Telegraph".**

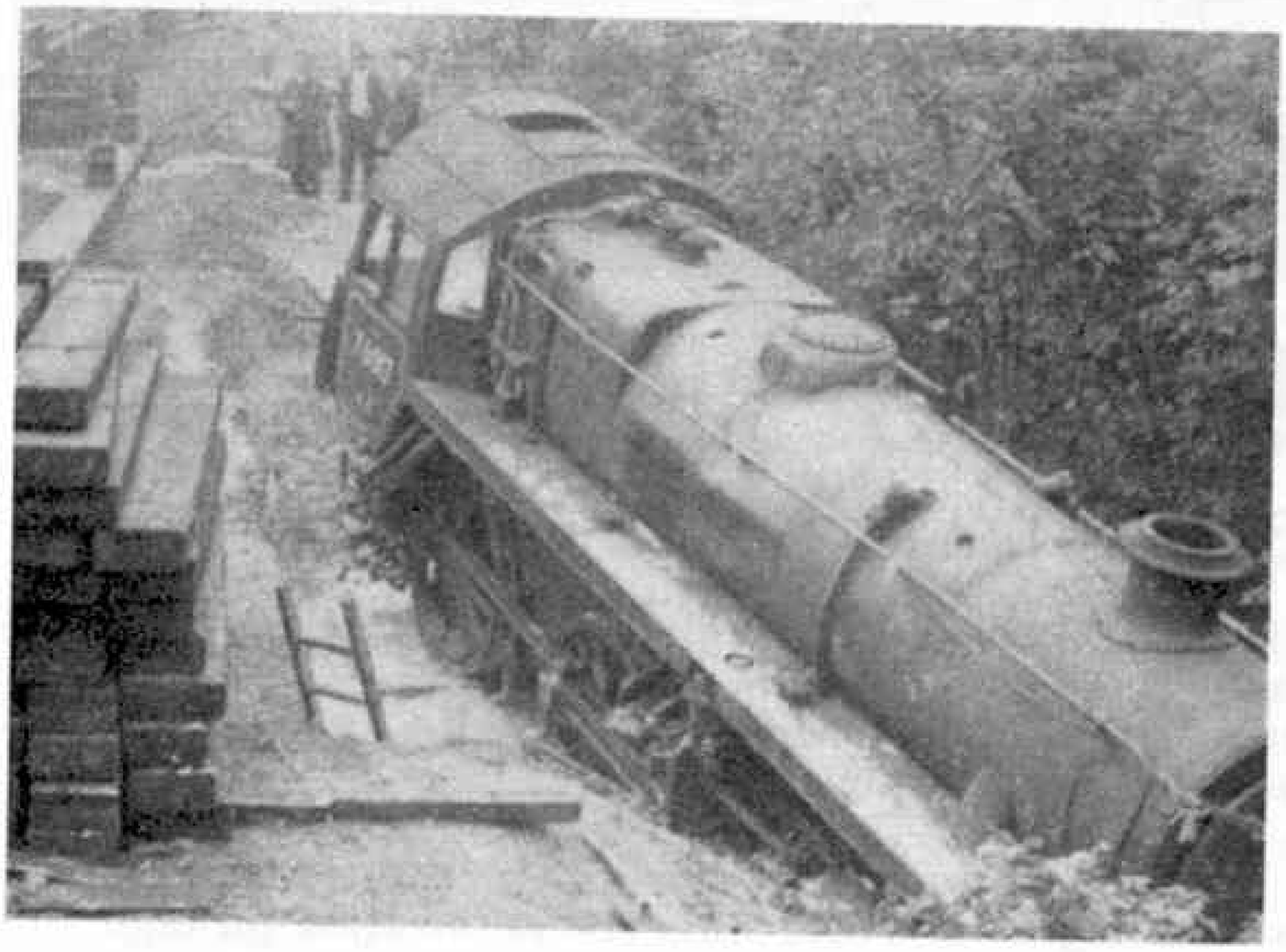
experiences, and have just sat quietly watching after mishaps have deprived them of success. Lesser mortals would have been moved to anguish, but these men are masters, and with them Stirling undoubtedly ranks. He has been rightly bracketed with Fangio, Ascari, Gonzales and Farina, who with him make up the five greatest figures of the racing world.

Will Stirling achieve his greatest ambition, that of bringing the World Championship to Britain? The 1955 Grand Prix programme will show. Stirling has now joined the Mercedes-Benz team. The invitation to do so was in itself a great tribute to him, and he was right to accept it in the absence at present of a British car with a powerful organisation behind it that could give him the opportunity of bringing the Championship to this country. He has won the B.R.D.C. Gold Star four times in the last five years; may he create a similar record in the World Championship.

# Problem for a Breakdown Gang

By S. C. Townroe, A.M.I.Mech.E.

A NEW British Railways Class 4 2–6–0 locomotive, No. 76017, caused some excitement recently in the quiet Hampshire town of Whitchurch when it was derailed.



**An engine that has become derailed and is here seen after being pulled upright out of bushes on the right.**

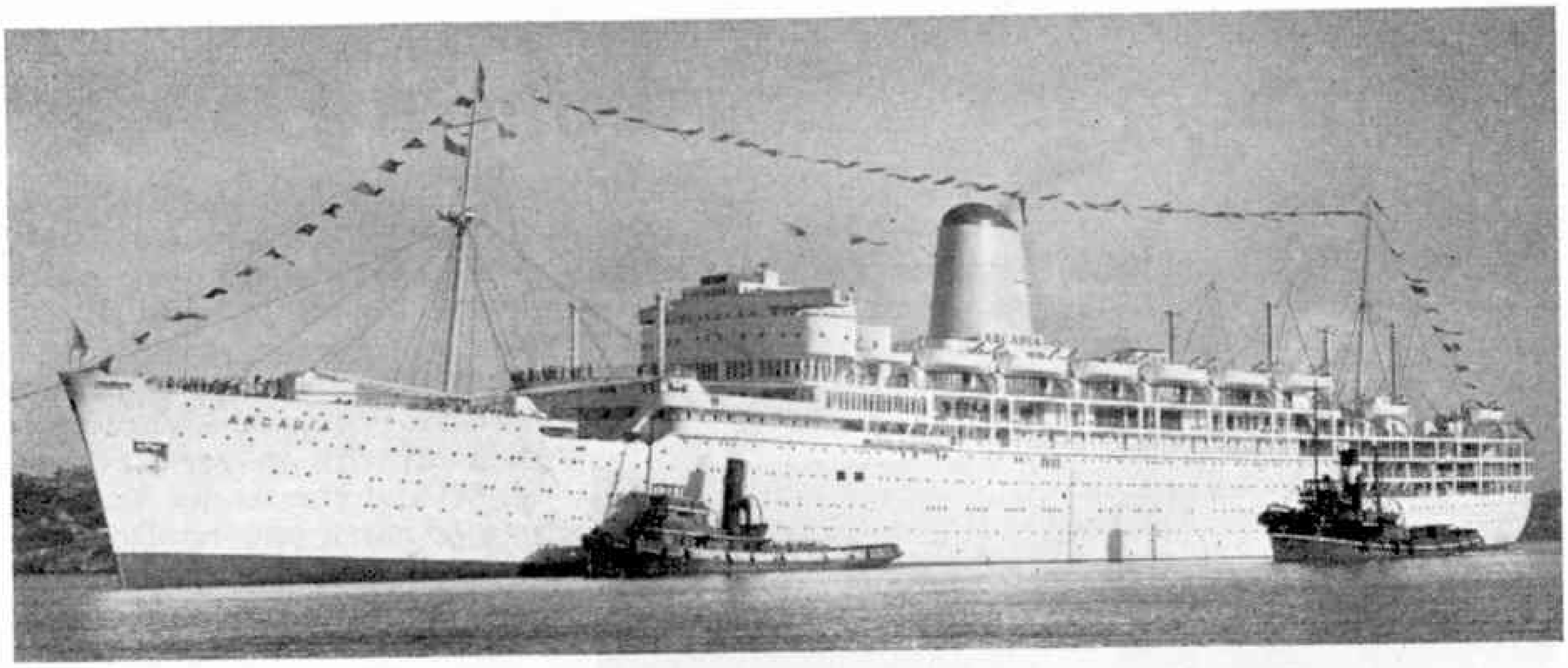
It came to a rest in a precarious position on the slope of a steep embankment, down which it threatened at any moment to make an elephantine plunge through trees and bushes on to the local cricket ground. It might have done this to begin with, had not its tender stuck firmly in a soft patch of ground! Luckily, the engine crew escaped unhurt.

The engine lay out of reach of breakdown cranes, and its recovery had to proceed by a series of carefully planned stages. To start with, it was obvious that the tender would have to be disconnected and taken out of the way before the engine itself could be tackled, but the breakdown gang had, first of all, to find some means of securing the engine against further movement.

Nature had kindly provided a tree, on the opposite slope of the embankment, which was sufficiently robust to serve as an anchor. So a hawser was run to it from the engine, passing under the rails of the track atop the embankment, over which trains were travelling at reduced speed. This prevented the 60-ton engine from rolling down the bank. The drawbar between engine and tender was then cut with an oxy-acetylene torch, and the tender was dug free of earth and hauled back to a point within reach of a 36-ton breakdown crane. The tender, when empty, only weighed 20½ tons.

The next stage was the excavation of a shelf on the embankment, to provide a level platform, floored with timber, on to which the engine could be pulled upright. When this had been done and the engine was in a position of stability, more earth was cut away from the bank between the engine and the top, to allow the engine to be slewed sideways. After it had been brought sufficiently close to the running line, two 36-ton cranes were able to lift the engine out of what was, by then, a sizeable hole, and it was triumphantly rerailed.

**Two 36-ton cranes preparing to lift the engine, as seen from the roof of the breakdown train.**



# "Arcadia" and "Iberia"

## Two New 30,000-Ton P. and O. Ships

LAST year the Peninsular and Oriental Company added to their already large fleet two 30,000-ton passenger liners. They are the *Arcadia* and *Iberia*, which run between Tilbury and Australian ports via Port Said, Aden, Bombay and Colombo. They are the biggest vessels trading regularly between the United Kingdom and Australia. As such they have aroused considerable interest, each able to carry 1,400 passengers and worked by a crew totalling 700. Both are fitted with Denny-Brown stabilisers.

**The illustration at the head of the page shows the Peninsular and Oriental liner "Arcadia," of 29,734 tons. This illustration, and those on the opposite page, are reproduced by courtesy of the Peninsular and Oriental Steam Navigation Company.**

Stabilisers are not new to the P. and O. Company. The first large ship to have them incorporated into her design was their *Chusan*, a vessel of 24,000 tons built in 1950. In rough weather, these fins project from each side of the ship—beneath the water line—and correct the roll of the vessel by means of vertical and horizontal gyroscopes. When not in use they are mechanically retracted into special housings within the hull, operated by an electric switch on the bridge.

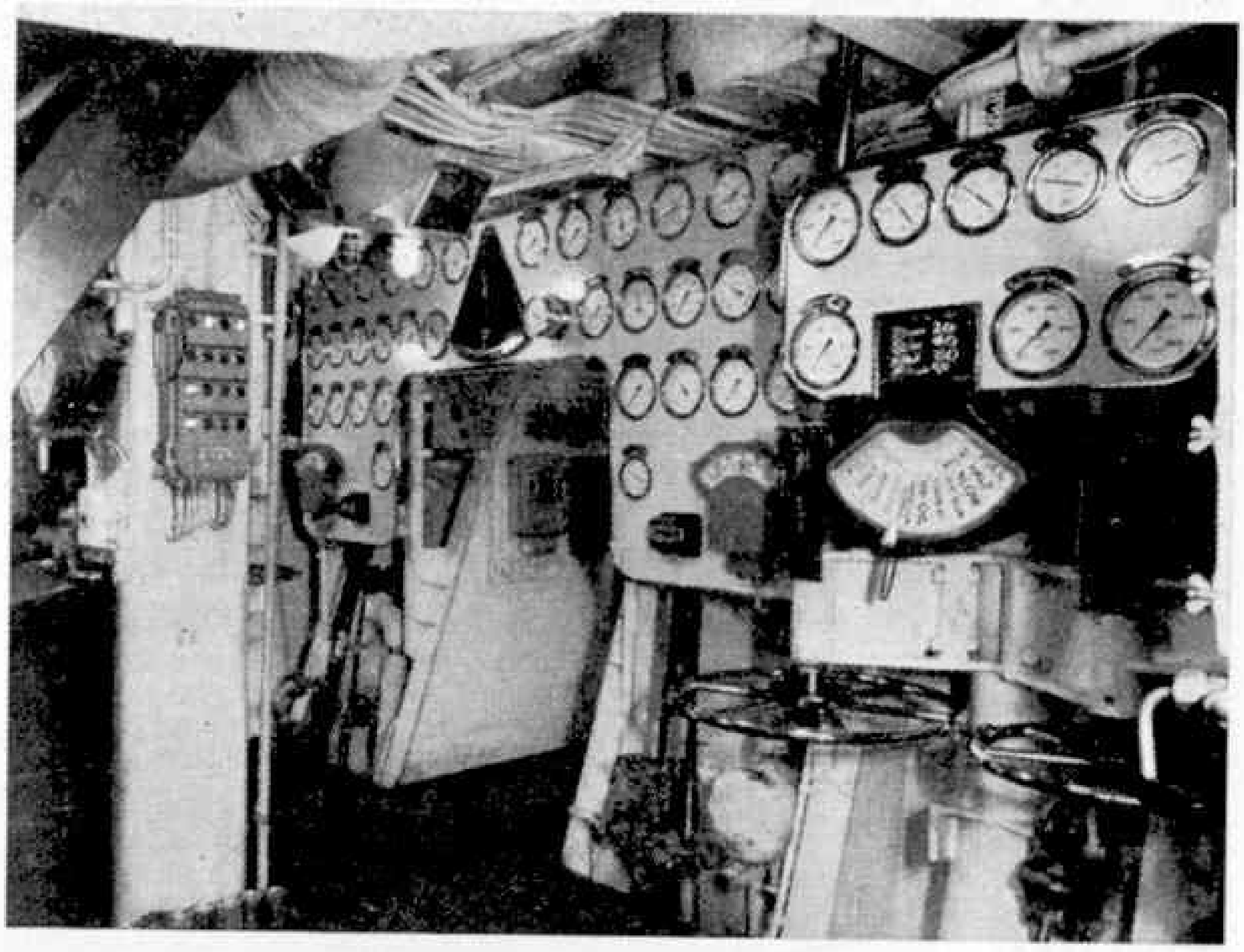
Stabilisers have proved so successful that they have been fitted to *Arcadia* and *Iberia*, as also have all the latest navigational aids. These include a Sperry Mark XIV gyrocompass, with repeaters on each wing of the navigating bridge and in the wheel-house. An interesting feature of these ships is that another repeater is installed in the passengers' observation lounge for the benefit of those amateur navigators—and some professional ones, too—who are always to be found among travellers in a large liner.

The radio equipment includes the Marconi "Worldspan" transmitter, capable of world-wide communication on high and medium frequencies. It gives instantaneous "spot" tuning to any one of 37 pre-selected frequencies. The Marconi "Radiolocator IV" radar set has a range of 40 miles. The Direction Finder is a Marconi "Lodestone," to which is coupled a gyrocompass repeater, so that a true bearing from the compass is obtained rather than a bearing relative to the ship's position.

Rather an innovation for a merchant ship is the fitting of a Chernikeeff Log, previously more or less confined to ships of the Royal Navy. This is an impeller that is lowered, electrically, from the hull of the ship and records on dials in the chartroom the speed and mileage of the vessel.

The main propelling machinery consists of a twin screw installation of geared turbines designed to give a normal power of 34,000 shaft horse power at 130 revolutions per minute, and a maximum power of 42,500 s.h.p. at 140 r.p.m. Each screw is driven by an independent set of turbines, each set comprising a High Pressure, an Intermediate Pressure and a Low Pressure turbine working in series. The astern turbines, which are incorporated

in the I.P. and L.P. casings, are capable of developing about 65 per cent. of the normal ahead power. The pressure of the steam supply to the H.P. turbine is 500 lb. per sq. in. at a temperature of 850°F., and it is generated by three large watertube boilers. Electricity is supplied by three British Thomson-Houston generators, each of 1,200 k.w. capacity at 220 volts, D.C. The turbine speed of 5,500 r.p.m. is reduced by single-reduction double-helical gearing to 600 r.p.m. at the generator.



**The picture on the right shows the scene on the main control platform of the P. & O. liner "Iberia," looking aft. This vessel is illustrated at the foot of the page.**

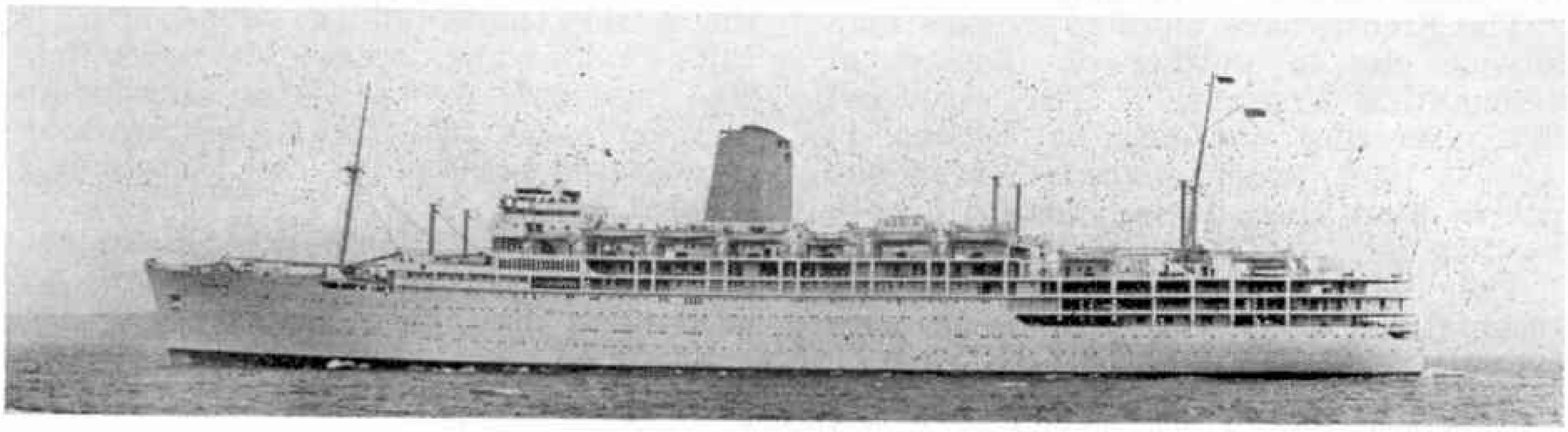
The new liners have funnels designed to eliminate the danger of smuts falling on to the long sports deck areas. It is interesting to note that if the casing of one of the funnels were empty, three London double-deck buses could be driven through it side by side. The casing alone weighs 40 tons and with the addition of the uptakes and all internal fittings there will be a total weight of 85 tons. The new style of funnel is the result of close co-operation between the builders, John Brown and Co. (Clydebank) Ltd., the P. and O. Company and Thermotank Ltd., in whose wind tunnel smoke tests were carried out to ensure the efficiency of the design before its final adoption.

One of the drawbacks of large passenger carrying ships on long sea voyages has been the storage of fresh water for the boilers and human consumption. This has been overcome to a large extent by a system of making fresh water from sea water. Plants in *Arcadia* and *Iberia* are each capable of converting 550 tons each day by double distillation, a system invented by Mr. S. A. Smith when he was the P. and O. Line's superintendent engineer.

Each liner is fitted with a very comprehensive sound reproducing system. The arrangement is so wired that different programmes may be relayed to four separate groups of loudspeakers simultaneously. In all, 156 speakers are installed in each ship. As the *Arcadia* and *Iberia* steam east or west, and clocks aboard are advanced or retarded, it is sometimes necessary for programmes to be "canned" on a magnetic tape and relayed to the passengers at a more suitable time.

First Class passengers are accommodated in one, two or three berth cabins, a number of which have private bathrooms or showers and two even have private verandahs. Each cabin is fitted with a telephone connected to a 500-line manually controlled switchboard which, in port, is connected to the local telephone system.

The public rooms (*Continued on page 164*)



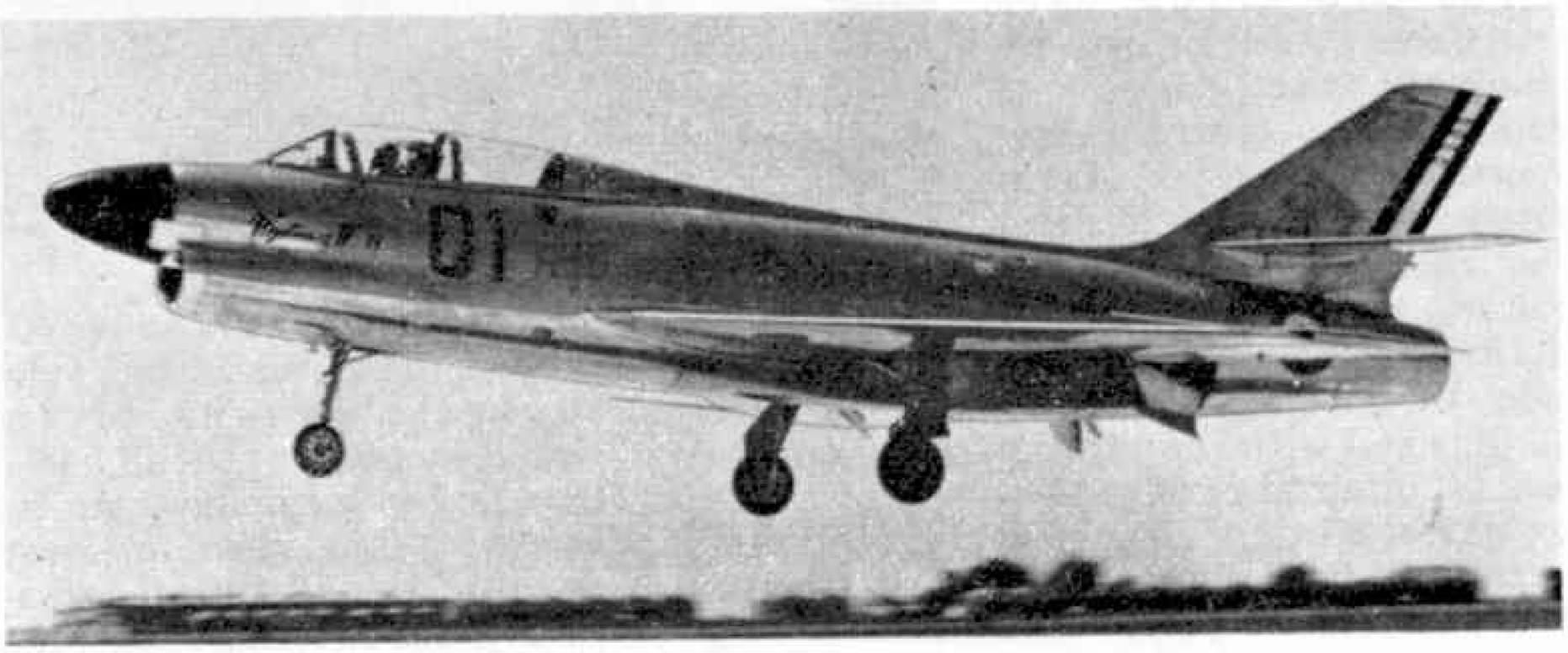
# The 1955 Paris Fashions

By John W. R. Taylor

IN three months' time, aircraft engineers and enthusiasts from all over the world will flock to Paris, to attend the 21st International Aviation Salon at Le Bourget Airport.

It will be different in many ways from our own S.B.A.C. Flying Display and Exhibition, which is staged at Farnborough each September. To start with, the Salon is held only on alternate years, which ensures a high proportion of new types; especially as it is a truly international show, with exhibits from Britain, America, Sweden, Belgium, Holland and Italy to supplement the products of France's own aircraft industry.

Nor is the flying display a mere parade of individual aeroplanes.



**The two-seat Dassault Mystère IVN all-weather interceptor. The black nose-cone houses radar search equipment.**

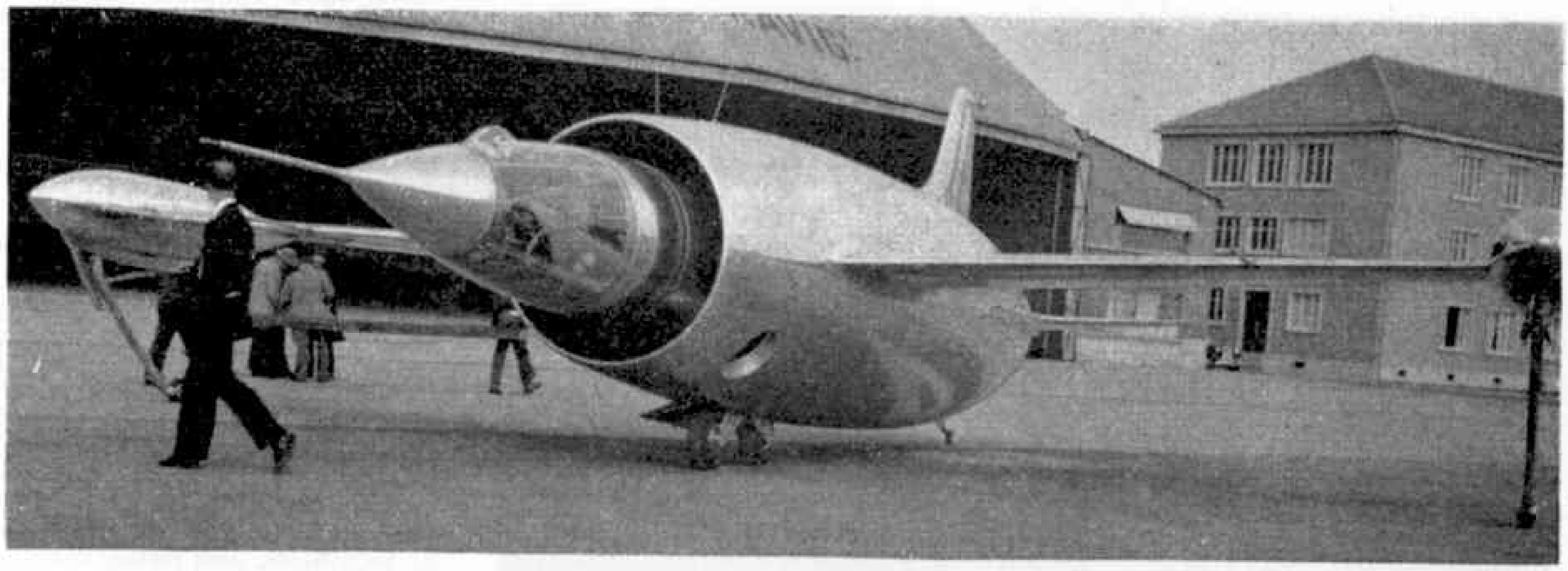
Fighters and bombers of the French Air Force usually fly past in swarms; paratroops make a massed descent on to the airfield; the finest aerobatic teams of the R.A.F., U.S.A.F., Belgian and French Air Forces get the vast crowds on to their toes. For three hours the sky is filled with a spectacle that combines sufficient thrills to satisfy even the average small boy, with all the grace and elegance of the more usual kind of fashion show for which Paris is world-famous.

The French have more experience than anyone else in putting on displays of aeronautical "fashions". The very first flying meeting was held at Rheims in August 1909, and a quarter of a million people went there to see famous airmen battling for £13,000 worth of prizes.

They got their money's worth; for records fell every day and there were sometimes as many as 12 aeroplanes in the air at once—an unprecedented sight in the "stick-and-string" days. British-born Henry Farman set up new world records for endurance and distance, by remaining airborne for more than three hours, during which he covered 112 miles. Hubert Latham climbed to a height of 508 ft. in his graceful Antoinette monoplane. Glenn Curtiss, the great American pioneer, won the Gordon Bennett speed event, only to have his record smashed by Louis Blériot, who tore round a 10 km. course at the "tremendous velocity" of 48 m.p.h., before crashing.

No new flying records are likely to be set up at Le Bourget in June of this year; but there will be plenty of evidence of progress made in the 46 years that have passed since that first meeting at Rheims. Several aircraft will produce "sonic bangs" as they dive through the so-called sound barrier; and the public may even see for the first time aeroplanes flying faster than sound in level flight. There will be jet bombers able to fly non-stop from Texas to Paris and beyond. Others that can cruise almost at the speed of sound at heights up to 60,000 ft. Air liners equipped to carry 100 passengers in comfort between the world's multi-million pound airports will be followed by tiny two-seat helicopters that need only the back of a lorry for an "airfield", and lightplanes that anybody can build at home at less cost than buying a baby car.

The Hunters, Canberras, Stratojets, Sabres, Viscounts and Britannias will get their share of applause; but it is upon the products of the French Aircraft industry that all eyes will be focused.



**The illustration above shows the incredible Leduc 0.21 experimental aircraft, the tubby fuselage of which forms the outer shell of its powerful ramjet engine. The cockpit is in the transparent nose-cone. Below, Test Pilot Littolff is seen climbing aboard this remarkable aircraft.**

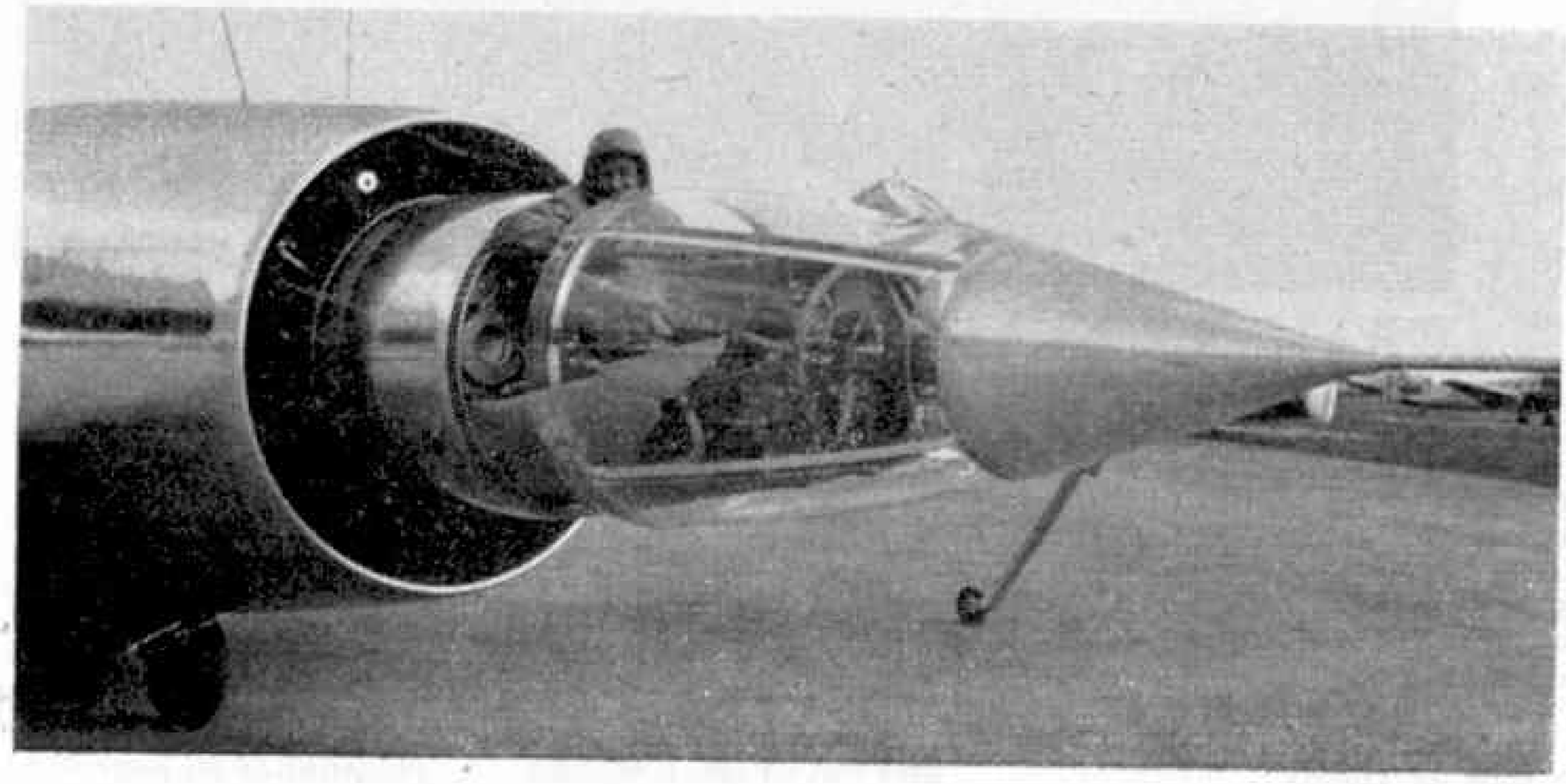
Ten years ago there was hardly an industry at all. By 1950, reconstruction had been sufficient to produce a crop of interesting prototypes. But there were virtually no production orders, and most people doubted that the industry had either the experience or the energy to build aeroplanes in quantity if they were ordered. There was no denying that French designers were as brilliant as ever, but it seemed as if their industry was dead.

The last five years have painted a very different picture. Some of the French aircraft of 1955 are as good as, or better than, any others in the world. More important, they are flowing from the factories in ever-increasing numbers.

Quite a lot of them have been designed by private enterprise firms; but the production is centred largely in the big, well-equipped factories of the State-controlled Sociétés Nationales de Constructions Aéronautiques. Examples are the fine single-seat fighters designed by Avions Marcel Dassault. Altogether 28,000 people are busy building these aircraft; but only 3,000 of them are employed in Dassault's own works, where the fighters are assembled and flight tested.

First of the series was the Ouragan (Hurricane), which has slightly sweptback wings and is powered by a French-built Rolls-Royce Nene turbojet. Several squadrons of Ouragans are now in service with the French Air Force, and they are being joined by the first of 150 Dassault Mystère IIC's, which are basically the same design, with more (35°) sweepback and a SNECMA Atar 101D turbojet, giving 6,600 lb. of thrust.

After them will come large numbers of Mystère IV's which, despite their name, are completely new aircraft, with thinner, 41° swept wings, more powerful engines, and 55 air-to-air rockets as well as the standard fixed armament of two 30 mm. cannon. The Americans have placed an "off-shore" order for 225 Mystère IVA's with 7,700 lb. thrust Hispano-Suiza Verdon engines. The French Air Force have followed up with another very large order for Mystère IVB's, powered by either Atar or Avon



**Nord 2501 Noratlas transport. It can have small jet engines mounted on its wingtips to improve take-off in hot climates.**

turbojets with afterburners; and it is probable that the new two-seat Mystère IVN all-weather fighter will also go into production.

These machines are second-to-none, and the Avon-powered Mystère IVB prototype flew faster than sound in level flight over a year ago. But even more revolutionary prototypes are flying in France. There is the SNCASO 9000 Trident, which has a triple rocket motor in its fuselage and two small turbojets on its wingtips. The idea is to use the combined power of all engines for take-off, climb and combat; and to cruise with only the turbojets running to give a reasonable endurance, because large rocket motors burn up to a ton of fuel each minute. From the experimental SO.9000 will be developed the 1,000 m.p.h. SO.9050 interceptor.

Then there is the delta-wing, Atar-powered SFECMAS Gerfaut, another level-flight supersonic prototype; and the SNCASE 5000 Baroudeur ground attack fighter, which has no wheels. By taking off from a trolley, which stays on the ground, and

**The SNCASO Trident rocket-fighter, which has jet engines on its wingtips for cruising.**

by landing on small retractable skids, it is independent of airfields, being able to operate from rough ground, roads, beaches, ice or snow.

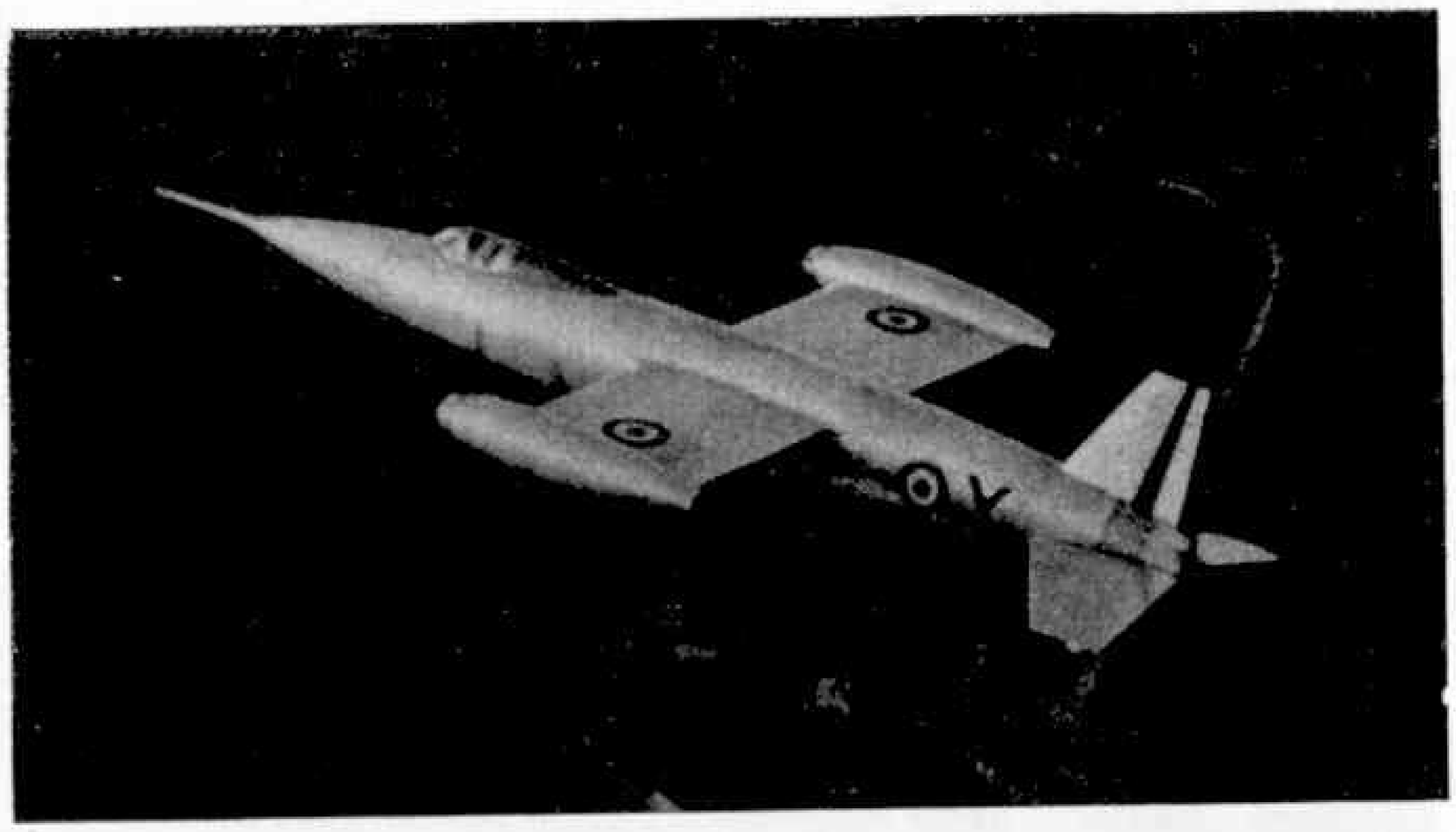
Most startling of all perhaps is the Leduc 0.21, the tubby fuselage of which forms the outer casing of its ramjet engine, which has no moving parts. The 0.21 has to be launched from a "mother-plane", as a ramjet will work only when it is moving fast enough for air to be rammed through it at high speed. But the Leduc 0.22 fighter, due to fly this year, will have an Atar engine as well, so that it can take off by itself and build up sufficient speed for the ramjet to start working. This strange-looking aircraft, with its cockpit in a long transparent nose-cone, and short sweptback wings, will not only fly at twice the speed of sound but will *climb* at supersonic speeds, reaching 50,000 ft. in less than three minutes. Its ramjet will develop 60 tons of thrust.

France has another world-beater in the sweptwing SO.4050 Vautour, which can carry an atomic bomb and dive faster than sound. Three prototypes have been built; the first as a two-seat all-weather fighter, the second as a single-seat ground support aircraft, and the third as a two-seat bomber. Numbers one and two each have two Atar turbojets; number three a pair of Sapphires, and other engines may be fitted to production aircraft, including Hispano-built Avons.

Nor should we forget the splendid Nord 2501 Noratlas transport, which looks like a junior edition of the twin-boomed Fairchild Packet and will carry five tons of cargo for 930 miles at 208 m.p.h. on the power of two French-built Bristol Hercules piston engines.

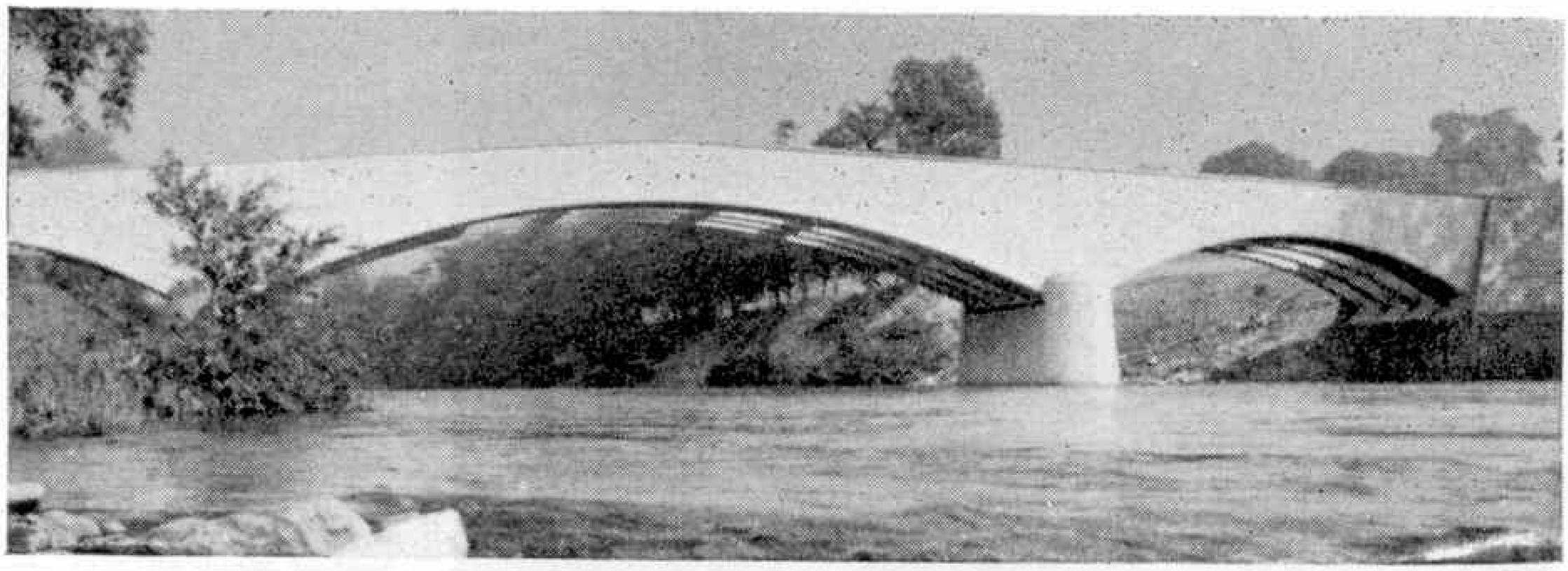
But the most enterprising French transport is, of course, the Hurel-Dubois HD.32, which has a fantastic wing more than 147 ft. in span and less than 8 ft. wide. It certainly does not look right; but it enables the HD.32 to lift incredible loads out of very small airfields. As a result, Air France have ordered 24 to replace their aging Dakotas, and the French Navy are reported to want 100 for shore-based anti-submarine patrol. For passenger work, the HD.32 will carry 44 passengers about 600 miles at 167 m.p.h. on two Twin-Wasp engines totalling only 2,400 h.p.—less than the power of one of the Elizabethan's two Centauruses!

The French are entering the jet-transport business



too, and the prototype SE.210 Caravelle may be ready for flight by the time this article appears. It is an interesting design, about the same size as a Comet and with accommodation for up to 70 passengers, but with its two 10,000 lb. thrust Avon engines mounted on each side of the rear fuselage. Its wings are sweptback at 20°, and it uses a Comet nose and cockpit.

At the other end of the scale in size, but no less interesting, is the tiny SO.1221 Djinn helicopter. In production as an Army observation "runabout," it is powered by a Palouste turbo-generator, which simply pumps compressed air through the hollow rotor blades and out of the tips, like (*Continued on page 164*)



# A Bridge for Water

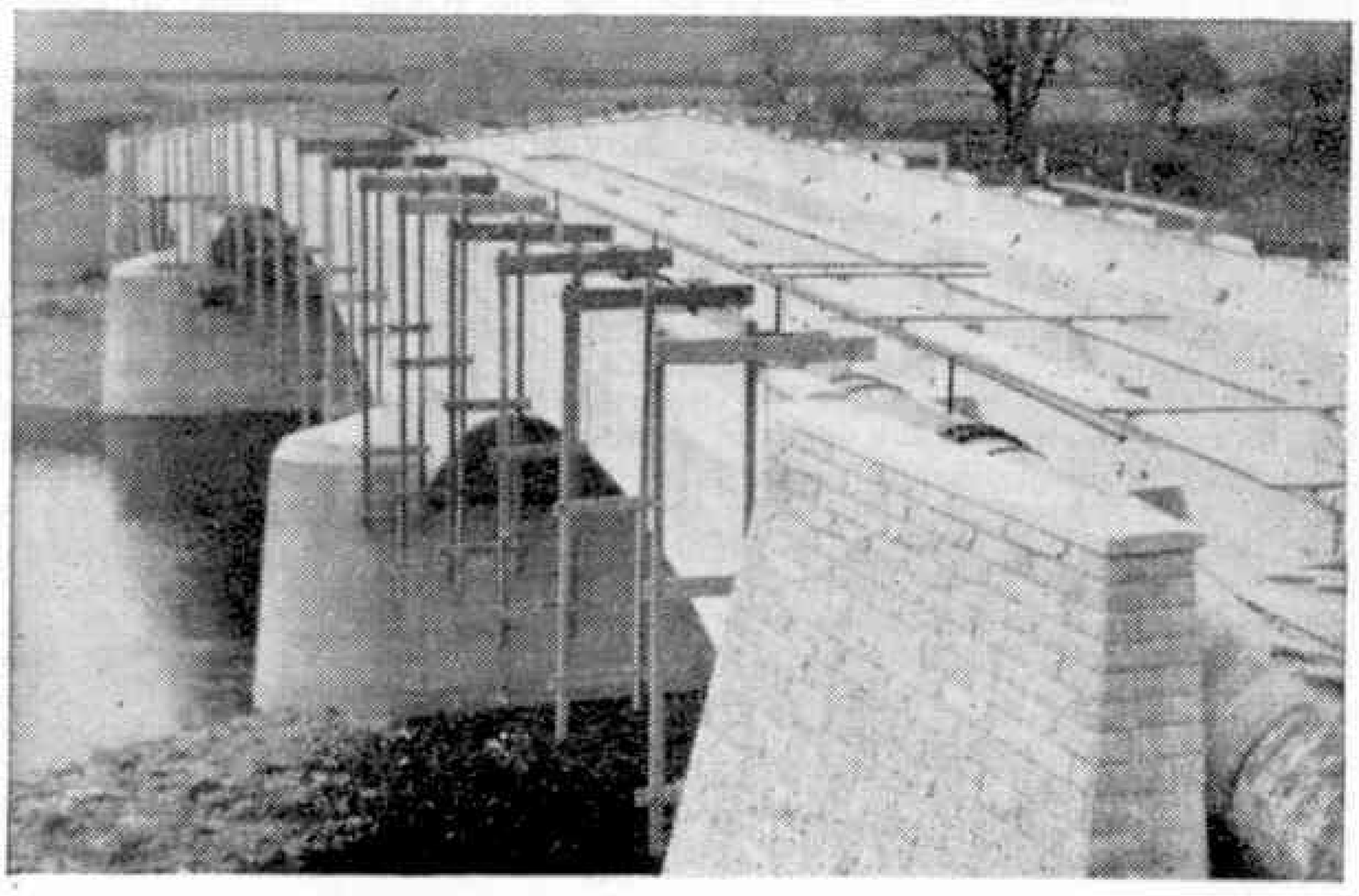
By J. L. Hepworth

THE graceful reinforced concrete bridge seen in our picture has recently been completed near Kirkby Lonsdale in Westmorland. It carries across the River Lune part of the new water pipeline of the Manchester Corporation Waterworks running from Haweswater to Manchester, and its three spans have been designed to fit in with the beauty of the riverside scenery.

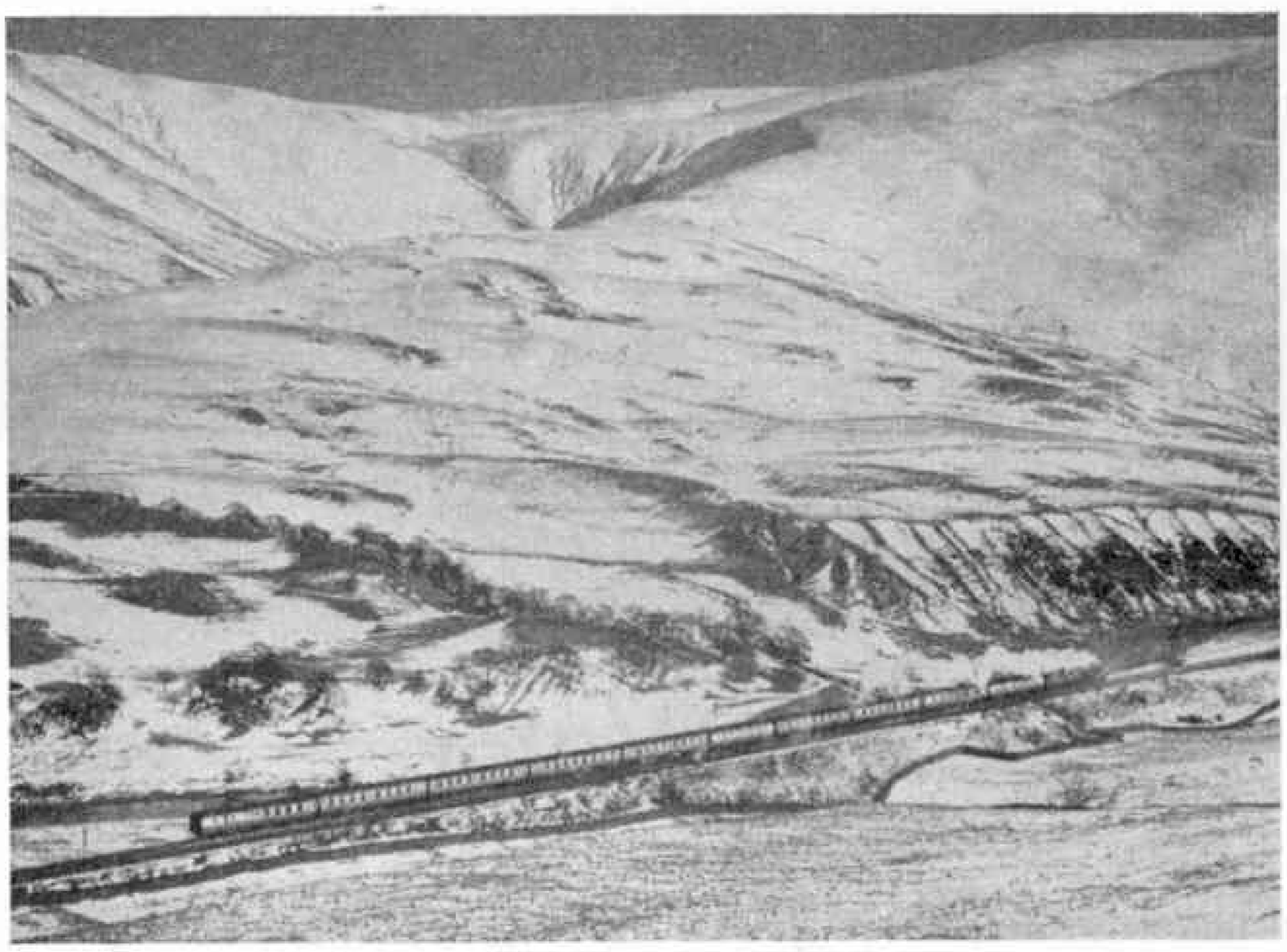
The present scheme involves one pipeline only, but the bridge has been built to accommodate four if required. The single existing pipe rests in a series of concrete saddles, and is fixed in position by clamps. The illustration at the head of the page shows the undersides of the saddles for future additions to the number of pipes.

Unlike a road bridge, this one has no decking and consists of a series of deep ribs, between which the massive steel tubes are to run. The central ends of the spans appear to be solidly built into the two piers, but a close examination reveals the the loading is actually carried by narrow facings, which can slide on the piers to allow for expansion. The complete structure is also free to move in the abutments, which are stone-faced and add to the general impression of careful planning for appearance that the bridge gives. The actual finish of the bridge is a light brown rough coating resembling pebbledash.

In flood the River Lune can rise very quickly, and during the building of the bridge some of the falsework was carried away and had to be rescued by the contractors. At these times, the surging water rips away the ground from trees lining the banks, and debris from higher up the river is hurled against any obstacles. But there is great strength as well as grace in this new bridge, and it will be a worthy partner to the two earlier structures crossing the Lune. These are the famous mediæval Devil's Bridge, and Stanley Bridge which carries the main road between Kendal and Ingleton. And all three, one for walkers, one for wheels and one for water, are within a distance of little more than half a mile.



**Above is a general view of the new bridge, with the Lune flowing beneath it. The bridge was finished by pebble-dashing and on the right scaffolding is shown being erected so that this could be done. The single pipe now crossing the bridge can be seen.**



**An unusual picture of the Royal Scot in snow, beginning the climb up Shap Fell, with Langdale Fell, the start of the long range of Howgill Fells, beyond it. Photograph by J. Hardman.**

# Railway Notes

By R. A. H. Weight

### Southern Tidings

Light Pacific No. 34088 *213 Squadron* hauled the Pullman car Royal train from Waterloo to Southampton when H.M. The Queen Mother departed last autumn for the United States and Canada. On her return the inward special from Southampton was headed by No. 34060 *25 Squadron*, which the next day was noted on a 3-coach special conveying the Duke of Edinburgh from Warminster (formerly G.W.R.) to Waterloo, when it is believed the 103¾-mile journey was made without stop via Salisbury. Engines of this class worked football specials through from Portsmouth to Bristol, Stapleton Road, by way of Netley, Southampton, Salisbury and Bath in January.

Nos. 34040–2, respectively named *Crewkerne*, *Wilton* and *Dorchester*, were transferred from Bath, where they were replaced on the ex-Somerset and Dorset joint line by class 5 B.R. 4–6–0s, to Eastleigh shed, taking over London-Bournemouth or Southampton boat train duties from there that had hitherto been the monopoly of Lord Nelson or King Arthur 4–6–0s.

The code on engines and lists for Fratton shed is now 70F; Newport and Ryde in the Isle of Wight have become 70G and 70H. The last S11 mixed traffic 4–4–0 No. 30400 has been withdrawn, as has the larger D15 No. 30464, leaving only two of the largest Drummond L.S.W.R. 4-coupled express type, with the one remaining L12, numbered 30434. At Tonbridge depot recent acquisitions were three U1 3-cyl. Moguls Nos. 31908–10. The one remaining E class unrebuilt Wainwright 4–4–0 No 31166 was hauling parcels trains to Hastings and elsewhere just before Christmas, as were several of the Brighton Atlantics.

Bertram Mills' Circus travelling from town to town in four or more heavy special trains by night necessitated many unusual workings along the vicinity of the south coast last summer and autumn. The locomotives concerned—in a number of instances running in pairs on account of steep gradients—in moves to and from Eastbourne, Bexhill (via Hastings) and Tunbridge Wells, for example, included K and N1 2–6–0s, Q1 0–6–0s, L 4–4–0 and various class 4 2–6–4 tanks.

New class 4 tanks numbered 80099–80100 were well in hand at Brighton at the beginning of this year. Of the earlier London Midland type, Nos. 42072–3 and 42093–4 have been transferred from the Southern to the North Eastern Region. U1 2–6–0s Nos. 31900–3 lately moved to Brighton for Oxted line–London and other passenger duties.

I recently received a log of the down *Man of Kent* express, when the 10-coach load of about 340 tons gross was worked to Folkestone in about half a minute less than scheduled time from the Waterloo stop, and in 80 min. from Charing Cross as booked, by dint of smart acceleration from the usual Tonbridge slack and from three additional ones between there and Ashford, accompanied by good hill climbing by No. 34097 *Holsworthy*, of the West Country Pacific class.

Less than one hour later the 5.6 p.m. from Cannon Street to Hastings follows the same steeply graded course between London Bridge and Tonbridge, but with a very full 11-coach train totalling about 385 tons behind the tender, hauled by a Schools 4–4–0. Thus its non-stop timing to Tunbridge Wells in such conditions presents a stiff proposition.

No. 30904 *Lancing*, on a wet evening when I was a recording passenger recently, did splendidly, taking a little longer than the larger boilered 4–6–2 up the initial climbs to Knockholt. On account of higher downhill speeds, with a maximum of 80, *Lancing* was slightly ahead approaching Tonbridge, where there was a severe signal slowing as well as the usual service slack over the curved junction on to the branch that rises steeply up to Tunbridge Wells, which was reached only 18 seconds late! By the next stop at Etchingham we were a minute early.

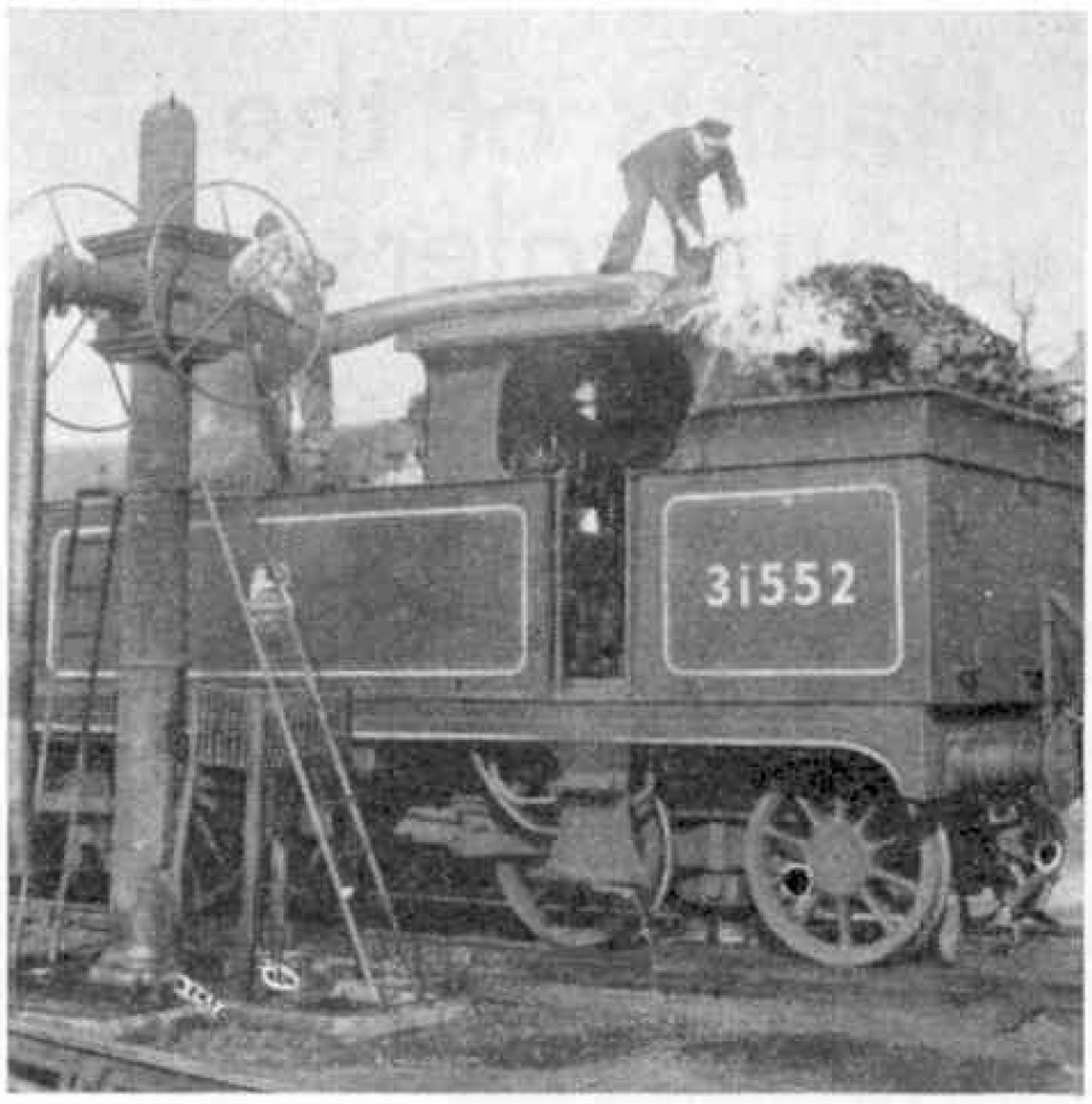
Smart station work with exceedingly brief halts, combined with footplate keenness, enabled the lightly loaded 11.10 a.m. Hastings-Charing Cross train to arrive punctually notwithstanding three additional stops to take up passengers and four other slacks. The locomotive was No. 30902 *Wellington*.

In an up morning Kent coast express, with winter load of 9 coaches, 315 tons full, behind 4–6–2 No. 34084 *253 Squadron*, I travelled the 54¼ miles from Ashford to London Bridge in 62 min., arriving there and at Charing Cross to time after a 2-min. late start. It was a good, steady run.

### Eastern and North Eastern Regions

In connection with the Royal visit to the West Riding, North East coast and Scotland last autumn, special trains conveying Her Majesty's party over various stages were hauled by A4 No. 60026 *Miles Beevor*, A1 No. 60135 *Madge Wildfire*, B1s Nos. 61248 *Geoffrey Gibbs* and 61250 *A. Harold Bibby* together, B1 No. 61019 *Nilghai* with V3 2–6–2T No. 67689, the latter with another of the same class, No. 67653, and L.M.R. class 5 4–6–0s No. 44665 and 45186.

The Royal train from King's Cross at the beginning of the Christmas visit to Sandringham was taken by B2 4–6–0 No. 61617 *Ford Castle* as far as King's Lynn. B17 No. 61653 *Huddersfield Town* worked a special conveying the Duke of Edinburgh from Cambridge




**Washing the coal? Not quite, but the enginemen of S.R. No. 31552 make sure of laying the dust. Photograph by R. Russell.**

to Great Yarmouth that had come from Cardiff over W.R. and L.M.R. metals via Oxford.

Another new 2–10–0 lately allocated to Peterborough, 35A was No. 92041; No. 92031 was also to go there after temporary duty at March. They haul heavy freight or mineral trains up to Ferme Park Yard, Hornsey, over the main line through Potters Bar, also via the Hertford–Cuffley loop. A batch of ex-L.M.S. class 3 2–6–2Ts is stationed at Hull, Botanic Gardens; new B.R. 2–6–2T No. 82029 went to 51A, Darlington shed. Another 2–6–4T, No. 42250, was transferred to Neasden from the Tilbury and Southend section, several L1 2–6–4Ts having moved from Neasden to King's Cross to augment the motive power available for heavy main line empty stock working.

No. 80114–5 were ready at Doncaster by the end of 1954, completing a series of 10 class 4 tanks. The last two J3 0–6–0s, Nos. 64131, 64140, were condemned, rendering this once numerous class of rebuilt Stirling and Ivatt G.N.R. goods engines extinct. More withdrawals have taken place of J21, J52, N1, A7 and E4 class locomotives, with odd examples of some other types.

Two new suburban set trains were reported running in the King's Cross district, including journeys to Broad Street or Moorgate, City, consisting each of five separate bogie vehicles weighing 141 tons. The usual formation for so long has been eight-coach sets articulated as two quadruplets; the earlier arrangement was four twins. Earlier still, long sets of hard-riding four-wheelers used to bump their way between the City and the Northern suburbs.

K3 2–6–0s regularly work to London yards and King's Cross shed from Colwick (Nottingham) and Immingham (Grimsby), as do V2 2–6–2s from the Leeds area, York and Doncaster on express goods or fish turns. Pacifics are sometimes seen on those important trains, including some that may be far from home and at the time running-in following overhaul at Doncaster works, such as A2 No. 60531 *Bahram*, much more usually running between Aberdeen and Dundee, noted on 8th January. On the same day special trains in connection with F.A. cup tie matches were hauled on the ex-Great Northern main line south of Grantham by Streamlined Pacifics *Silver Link* and *Silver Fox* (down and up Hastings S.R. trains), and *Sir Nigel Gresley*, on the northbound Tottenham-Gateshead special.

### More New Locomotives

Apart from several already mentioned this month, there are for announcement the class 5 standard 4–6–0 mixed traffic engines built at Derby numbered and stationed as follows: No. 73072, 6A, Chester; and Nos. 73073–4, 10C, Patricroft. From the same Works came class 4 2–6–4Ts Nos. 80055–8.

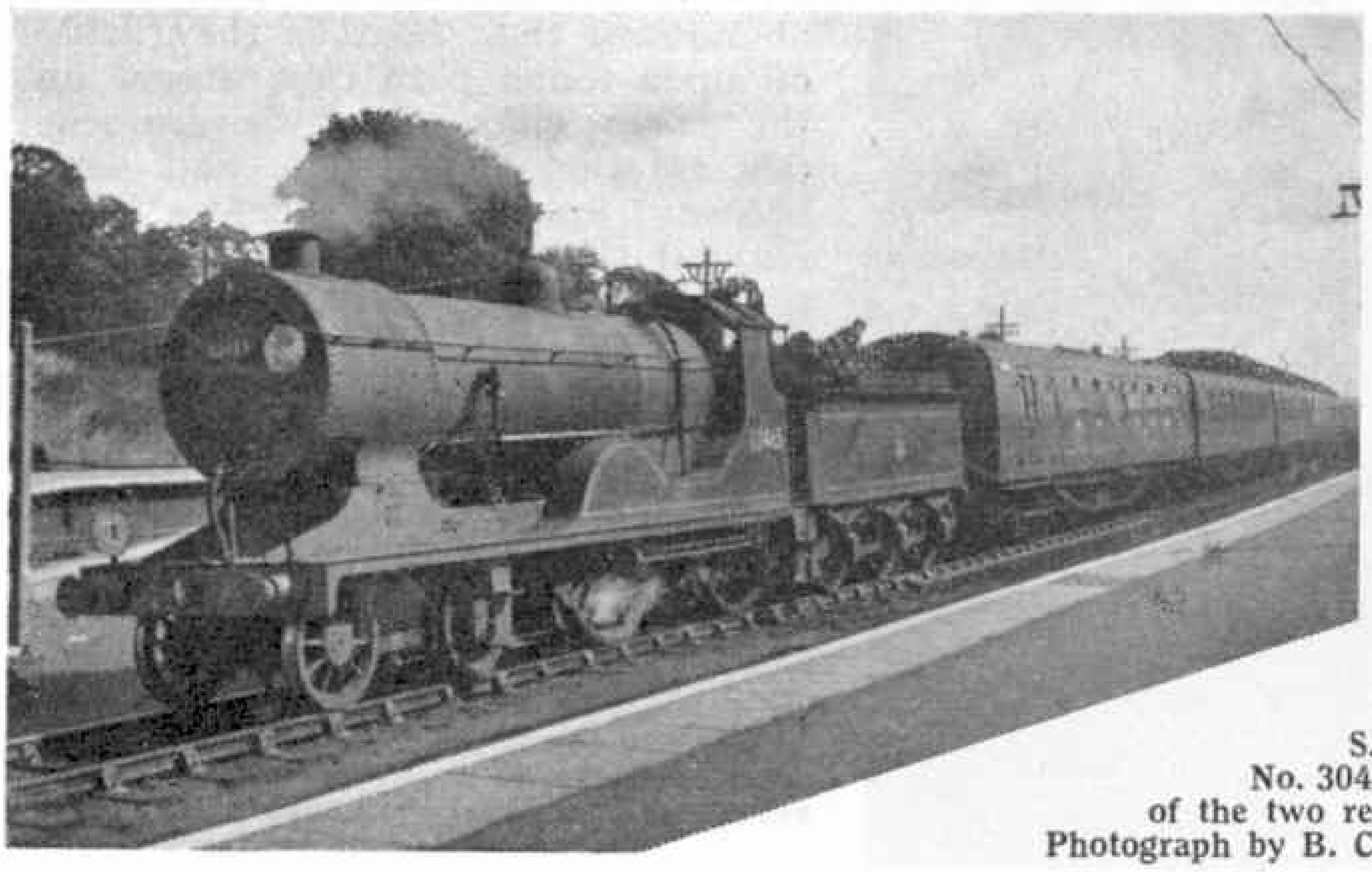
Small class 2 2–6–0s constructed at Darlington and numbered 78040–4 have been allocated to 27A, Bank Hall, Liverpool. More diesel 0–6–0 350 h.p. shunters numbered 13092–3, go to 75C, Norwood Junction shed, with Nos. 13094–6 also for the S.R.

From Swindon there is news of the completion of 2–6–2Ts Nos. 82030–1, continuing the B.R. class 3 design; of the receipt of 0–6–0T No. 9497, from the Yorkshire Engine Co. Ltd.; and of the withdrawal of another of the R.O.D. Great Central type 2–8–0s, numbered 3026.

### British Railways Modernisation Plan

As I write, details have just been announced of the British Transport Commission plan for the modernisation and re-equipment of British Railways. A widespread change-over from steam to electric and diesel power is envisaged, although naturally this can only come about gradually. There will be a much wider extension of diesel multiple-unit working such as has already proved so successful in the West Riding and the Cumberland areas. The elimination of shunting and trip working by steam should be completed over the next 15 years.

Improvements in track and stations, signalling and telecommunications and the re-modelling of train services also form part of the plan.



**S.R. Drummord D15 4-4-0 No. 30465 at Basingstoke. This is one of the two remaining engines of the class. Photograph by B. C. Bending.**

# Haunts of the Smugglers

By Arthur Gaunt

SOME of the most thrilling chapters in English history concern the gangs of smugglers who operated round our shores 150-250 years ago, when wines, brandy, silks, tobacco and other goods were landed secretly, so that the excise duty payable on them might be avoided. Even today many inns and other old buildings are pointed out as having figured in this illegal trade, and most of these still retain features devised to help the contraband runners, such as secret cupboards and hidden entrances and exits.

Gangs flourished all along the Channel coast and more smugglers had their hide-outs on the East Coast, especially in Yorkshire, where the caves and small bays made it fairly easy to land illicit cargoes. A famous Yorkshire freebooter was Robin Lythe, and one of the storeplaces he used is called after him—Robin Lythe's Cave, a chamber in Flamborough Head.

Whitby was a noted hotbed of smuggling,

**Filey's Ship Inn, of smuggling fame, is not now a tavern. Inside it are hiding places in which smuggled goods were formerly stored.**

and many clashes took place between the Preventive men and the local gangs. On one occasion a number of smugglers were spotted as they were rowing ashore there with contraband from a ship anchored nearby. Preventive men hurried to the beach to intercept them, but the gang landed some distance away and abandoned their boat as they made off up a rough path that wound up the steep cliffs. The Government officers went in pursuit, and were halfway up the cliff before they realised that some of the gang had remained hidden in the boat and had now emerged to destroy the lower part of the path!

The officers were marooned on the face of the cliff and had to watch helplessly while the goods were being landed for transportation to secret storeplaces.

**The sails of this windmill at Rottingdean, near Brighton, were once used to give signals to smugglers approaching the coast with contraband.**

**Packages of tobacco, silk and other dutiable goods found safe hiding places in this old house at Hastings.**

Even such an up-to-date resort as Scarborough preserves souvenirs of smuggling days. In an alley near the harbour stands a curious building that for many years was the Three Mariners Inn, and this tavern has hollow beams, sliding panels, secret cupboards and other aids to smuggling. Although the premises were closed during the war, a few months ago it was proposed to re-open them as a showplace, so that visitors might see how smugglers operated in bygone days.

Two other Yorkshire inns that played parts in the business are at Filey and Saltburn. Filey's Ship Inn, like the Three Mariners at Scarborough, is no longer a tavern, but it has a model ship over the doorway, and inside the building are hidden recesses for storing contraband.

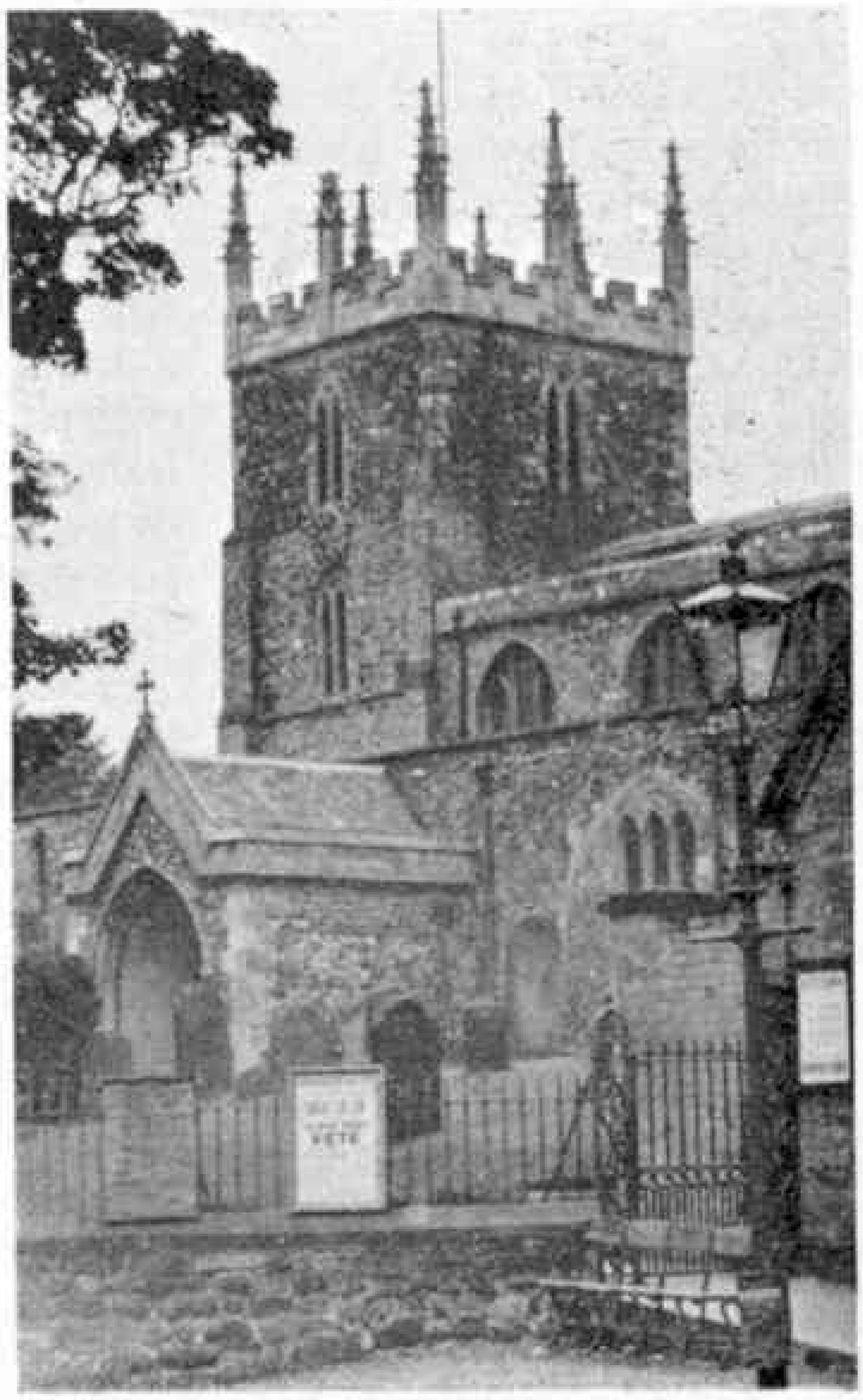
The Ship Inn at Saltburn is an ancient hostelry standing on the beach, with the sea coming almost up to the entrance. The premises were ideal for smuggling, for at the rear is a deep ravine running inland, and there strings of ponies could be hidden in readiness to carry the goods away quickly.

In those days the Ship Inn had a certain John Andrew as the landlord, but his real business was to lead a gang of smugglers who used a fast cutter named *Morgan Rattler*.

The cellars of the inn were sometimes crammed with contraband awaiting removal, yet although the Preventive men searched the building many times they never succeeded in finding the trapdoor leading to the cellars. Unknown to them it was in a stall in the stables, and in this stall the wily landlord kept a high spirited horse, which kicked madly whenever anyone but he approached, so that the Government officers were never able to examine the floor.

The freebooters, indeed, used many tricks to get contraband safely ashore and on its way to distribution centres. Overlooking the English Channel near Rottingdean, Sussex, stands a 200-year-old windmill that at one time was worked by a miller named Lot Elphick. He also owned ships used by smugglers, and it was his custom to set the mill sails at a pre-arranged angle when cargoes could be landed without risk. For years the Preventive men thereabouts were unable to understand how the smugglers knew when they could safely bring goods ashore, and how at other times they were aware that Government officers were hidden near the shore ready to pounce!

Other Sussex smugglers frequented the Pevensey district, and the old Mint House at Pevensey has no fewer than nine dark rooms just under the rafters of the roof, where contraband used to be hidden. Old Hastings, too, has a number of timber-framed houses with secret cupboards, and it is said that parsons preaching at evening services in the parish church were



**The crypt of Hornsea Parish Church, on the Yorkshire coast was at one time a hiding place for contraband.**

sometimes puzzled by a dwindling of the congregation, for they did not know that many of their flock were smugglers and were stealing away because news of the arrival of a ship had been whispered round.

In other instances, however, churches and churchyards figured in the business, sometimes with the connivance of the clergymen in charge. Fairfield Church in an isolated spot on Romney Marsh, Kent, is believed to have been used as a secret warehouse by smugglers, and some coastal churchyards have sham tombs once used for the same purpose.

An example is in the churchyard at Kinson, just off the Bournemouth-Ringwood road, where one side of a table tomb can be moved aside to provide access for contraband. A ledge halfway up the church tower is also pointed out as a hiding place, kegs of brandy having been hoisted there and placed out of sight.

**The old Mint House, Pevensey, is another building in which are secret compartments that were used for storing smuggled goods.**

The crypt of Hornsea Parish Church, on the Yorkshire coast, often held smuggled cargoes, the verger at one time being in league with a gang led by a freebooter named Pennel. But their secret trade came to a sudden end after a terrific gale, in which the wind tore the roof from the church. The verger was so alarmed, fearing that the storm was Divine retribution for the desecration of the crypt, that he turned informer. The gang was arrested and Pennel was hanged, his body then being hung in chains at Hornsea as a grim warning to other potential smugglers.

Goudhurst, a pretty village in the Weald of Kent, also saw the routing of a gang of freebooters, the Hawkhurst gang, just over 200 years ago. Growing tired of the demands of the smugglers, who commandeered their horses and homes, the villagers decided to submit no longer. Hawkhurst's men at once announced that on a certain day they would burn the village to the ground and murder every inhabitant. But the villagers were ready for the attack and repulsed the gang, after which the village was left to go about law-abiding tasks.

Cornwall, another notorious county for smuggling, had a gang led by John Carter. He was better known by the nickname "King of Prussia," and to this day an inlet near Penzance bears the name Prussia Cove. Carter seems to have been a more humane smuggler than most, and although he waged a long war against the law, he eventually retired to lead a more respectable life. When he was "in business" he even set up a battery of guns near his house above Prussia Cove, to protect his ships from interference while cargoes were being landed!

Those were exciting days at numerous places round Britain, and the incidents enacted on dark nights in the past lend thrills and romance to places which the present-day tourist can still see.

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**A Castle Run**—(*Continued from page 128*)

bowl as it were and divided by the River Avon.

A smart start followed and we were quickly through Twerton Tunnel with its Gothic entrances and doing 60 m.p.h. with the cut off brought well back to 18 per cent. and the regulator rather more than half open. Firing was easier now in view of the approaching end of the journey. Speed was well maintained through Saltford and Keynsham, and after passing the latter station water was again picked up from the track troughs The regulator was shut immediately before Brislington Tunnel, a noisy bore where the way out lies on a left hand curve. Another short tunnel at St. Anne's Wood followed, and then passing Bristol East Depot and North Somerset Junction a close succession of signals gave us a clear road into No. 5 platform at Temple Meads, where we curved left again to come to a standstill at 11.25, right on the dot.

# BOOKS TO READ

*Here we review books of interest and of use to readers of the M.M. With certain exceptions, which will be indicated, these should be ordered through a bookseller.*

### "SHIPS OF THE P. & O."

By Captain A. G. Course (Adlard Coles 6/6)

The Peninsular and Oriental Steam Navigation Company was founded in 1837, and a contract "was signed with the Admiralty to carry Her Majesty's mails as far as Gibraltar." A fortnightly service was planned, and of the six ships chartered for this purpose two "were the largest and most powerful steamships" then in service.

The spirit of enterprise shown in this first venture has characterised the Company's activities throughout its long history, and the story of its world-wide development is well told in this neat little book. After describing briefly how the Company originated, the author details the outstanding events in its history, devoting a special chapter to the ships built for the P. and O. between the first and second World Wars, and since 1945. Finally there is a tabulated list of the Company's ships, past and present, with the main technical details.

There are 16 excellent half-tone illustrations, and many good line drawings, including silhouettes. There are also deck plans of three P. and O. ships, the *Himalaya*, *Chusan* and *Arcadia*, but it is a pity that these plans are not presented as folding plates, as they are too small to be studied in detail without the aid of a magnifying glass.

### "CAMERA-TIPS FOR EVERYONE"

(Fountain Press 1/6)

This little book of general hints for the beginner in Amateur Photography touches upon many aspects of the hobby, such as types of camera and their limitations, use of exposure meters and filters, outdoor and indoor portraiture, landscape and seascape photography, photography by artificial light, and the taking of serial pictures to form a story. Like other Fountain Press publications, it is lavishly illustrated with half-tone pictures.

### "THE BRITISH FLAG"

By A. Swinscoe

(Brown, Son & Ferguson 3/6)

It is astonishing how few people can describe accurately how our National Flag is made up, or can tell at a glance if it is being flown the right way up! An excellent chance to remedy this ignorance is provided by this attractive little booklet, which illustrates in colour the flags of England, Scotland, and Ireland, and shows how they are combined to form our Union Flag, or Union Jack as it is generally called. A short account of the history of the respective flags is given, and also of the Ensign, the familiar flag flown at the rear of a ship.

### "MOULDING AND CASTING"

By F. J. Christopher (Foyle 2/6)

Model statuettes, ornaments, book ends, wall plaques, paper weights and so on can be produced in quantity quite easily from home-made moulds. If reasonable care is taken in preparing the moulds, and in the finishing of the castings, the craftsman can turn this fascinating hobby to profitable account by selling his home-made wares.

This handbook, by the Technical Editor of *Popular Handicrafts Magazine*, explains the work of moulding and casting in such a way that any reader without previous experience can, with very little practice, turn out perfect castings from equally perfect moulds. The process and working techniques are explained in simple language, and each stage of work is clearly illustrated.

### "00 GAUGE LAYOUT AND DESIGN"

By Ernest F. Carter

(Percival Marshall 3/6)

Here is a useful favourite that has gone through several reprintings. The author is well-known for his helpful miniature railway writings, and here he gives a great deal of sound advice that should benefit not only owners of a permanent railway system, for whom it is primarily intended, but also enthusiasts who like experimenting with different layout arrangements for various purposes.

Very fittingly space considerations are first dealt with, for on the amount of room available the type of a layout very largely depends. Station design and track arrangements also figure prominently. A noteworthy point is that the booklet will be found useful and interesting not only to the ardent constructor, who likes to make most of his equipment himself, but also to the enthusiast who for one reason or another prefers to use ready-make components.

### "THE OBSERVER'S BOOK OF BRITISH BIRDS' EGGS"

Compiled by G. Evans (Warne 5/–)

This companion volume to *The Observer's Book of British Birds* provides a useful pocket pictorial record of the eggs of almost every bird breeding in the British Isles. More than 180 different eggs are described, and there are 154 illustrations in natural colour and 26 in outline.

The notes mention the parts of the British Isles where the bird concerned is likely to be seen, the kind of places it chooses for its nest and the time of year when it lays its eggs, and explains how to recognise the nest and eggs when located. These details and the excellent illustrations, mostly in colour, should enable the amateur naturalist to identify the eggs quite easily, and it is the hope of both author and publisher that he will be content with merely observing the eggs, and will resist the temptation to rob the nests.

Mr. P. E. Brown, Secretary of the Royal Society for the Protection of Birds, contributes an interesting foreword to the book.

### "DISCOVERING ROADS AND BRIDGES"

By Marjorie O. Greenwood, M.A.

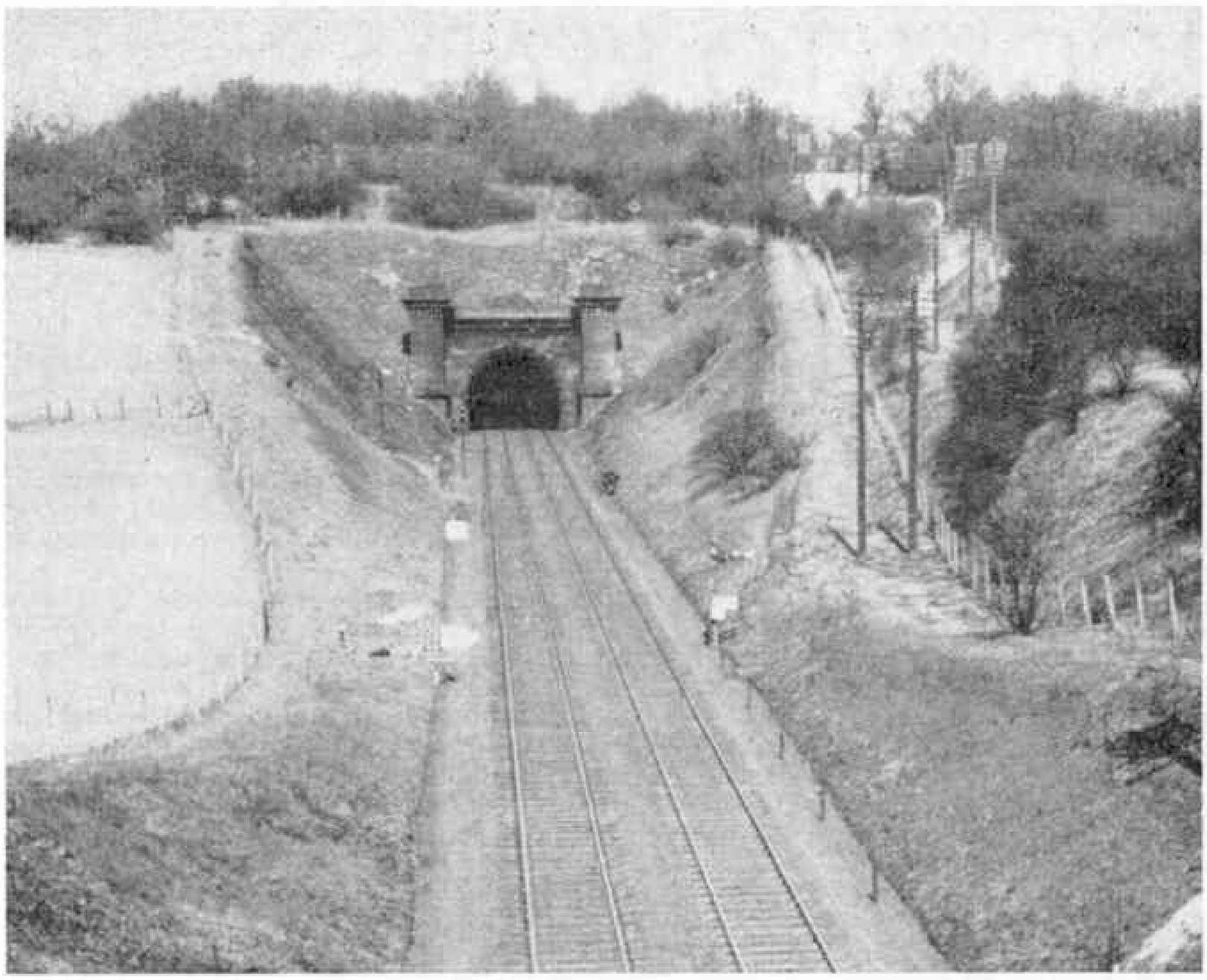
(University of London Press 6/–)

Roads and Bridges are such familiar features of the landscape that we take them for granted, and do not bother to ask ourselves why the winding roads follow the courses they do or why road bridges are of different types. These and many other interesting points are explained in this neat little book, which begins its story away back in Roman times. Part II deals with roads and bridges of today, and describes modern methods of road and bridge construction, the Ministry of Transport system of road numbering, types of road lighting, and so on. There are many excellent half-tone illustrations and line drawings.

### "AIRCRAFT ALBUM"

(Ian Allan 1/3)

Here is a pictorial cross-section of the great variety of types of British, American and Canadian aircraft. The 60 types illustrated include trainers, fighters, bombers, freight and troop transports, air liners, flying boats, amphibians and helicopters. They range from the single-engined D.H. Chipmunk trainer to the huge six-engined Convair B-36 bomber, and from the familiar Auster Aiglet light aircraft to the massive Blackburn Beverley, capable of carrying 22 tons of freight.



South end of North Welwyn Tunnel, seen from the north end of the South Tunnel. British Railways Photograph.

# Fire In a Tunnel

## A Spectacular Early Railway Accident

VERY early on the morning of Sunday, 9th June 1866, officials and workers of the Great Northern Railway were called hurriedly to North Welwyn Tunnel, in Hertfordshire, where a serious collision had taken place. They reached the south entrance of the tunnel at dawn and were confronted with a terrible sight. Suffocating clouds of smoke emerged from it, there was a roar like the sound of an enormous waterfall and violent explosions were heard at intervals.

The railwaymen had to give up any effort to make their way into the tunnel to see what had happened, and instead they climbed over the high ground beneath which the tunnel runs to reach its northern entrance. On the way they saw huge flames roaring out of the ventilation shaft of the tunnel from time to time, and realised that something very serious must have happened down below, for the shaft was 80 ft. deep.

On reaching the northern end of the tunnel they were able to enter, and out of it they dragged the rear wagons of a Scottish meat train that had been involved in the accident. That was all they could do, for the heat beyond these wagons was so intense that it was impossible to approach the rest of the wreckage. They just had to wait until the fire had died down. By this time the surrounding countryside had become thoroughly aroused and people gathered from all parts to look on at this strange scene. There was only one fire engine available, a small private one from Hatfield, and to provide this with water locomotives hauled full tenders up to the scene.

The accident seems to have been one of the most spectacular of all time. The trouble began a few minutes after midnight on that eventful Sunday, when a boiler tube burst in the engine of a northward bound train of empty coal wagons, bringing the train to a standstill. Not long afterwards a following Midland goods train ran into the stationary one, with the result that trucks were thrown over on to the up line. Then came the final blow. A train from the north bringing Scottish beef for the Monday market in London dashed at a good speed into the wreckage, and in a moment the tunnel was jammed by nearly 100 mangled trucks, piled up in places to such a height as almost to touch its roof.

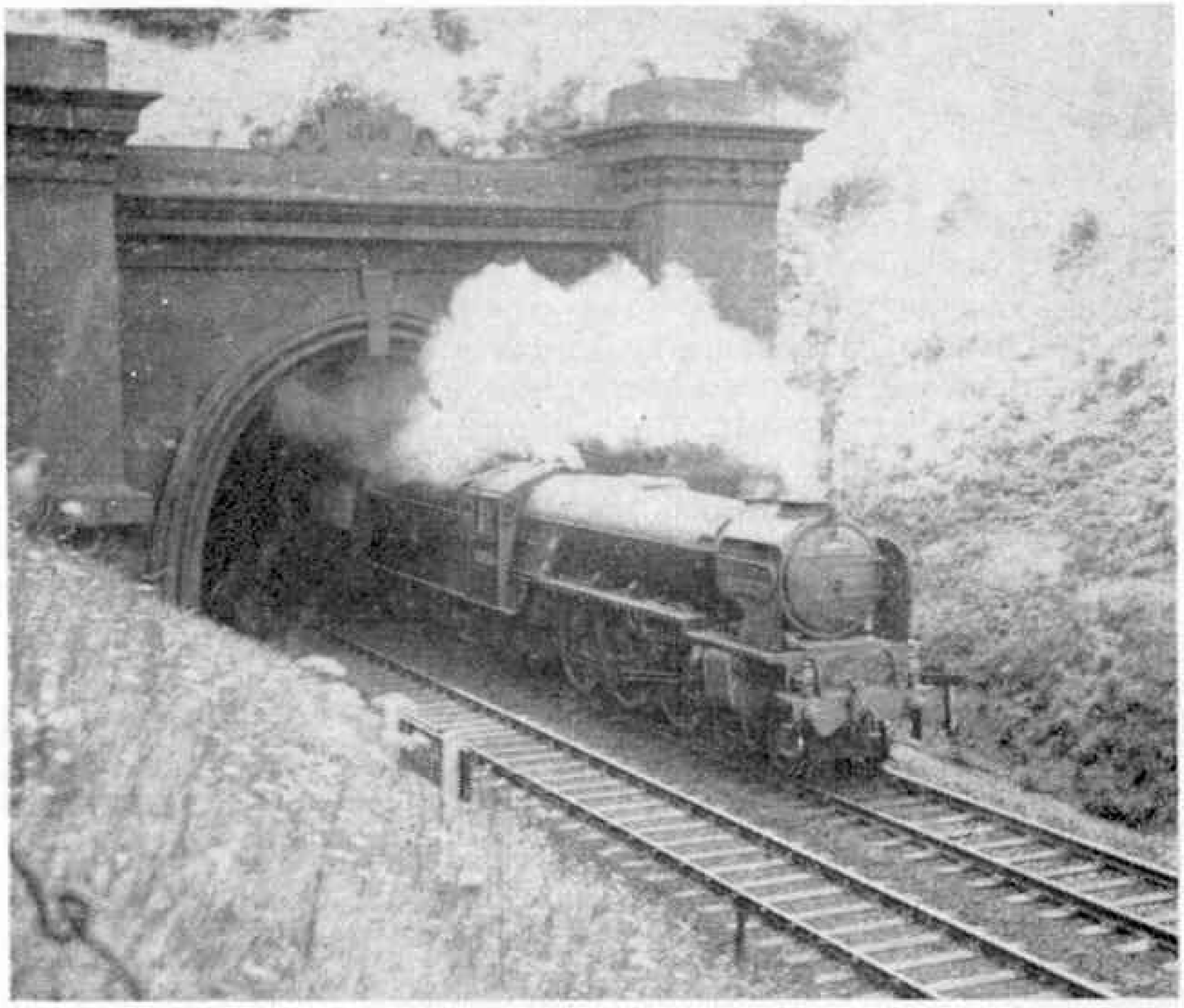
This was bad enough, but worse was to come. Burning coals from the overturned

engine of the meat train fell upon casks of oil that had been strewn upon the ground when the Midland goods train was wrecked. This started a fire that in no time became a raging inferno. The combination of tunnel and airshaft indeed created an ideal furnace, and the forced draught up the shaft fanned the flames to such a height that they shot out of it, nearly 200 ft. above the rails.

This was the position when the railwaymen arrived at dawn. More men were called for from places as far away as Doncaster, but not until 17 hours after the collision had the fire died down sufficiently to allow entry at the south end of the tunnel. A gang of about 450 mechanics and navvies then worked like beavers, dragging out the outlying debris so that the fire engine could attack the centre of the fire, now a smouldering mass beneath the airshaft. Powerful cranes assisted in removing the heavier wreckage when the fire had been subdued, but no trains could pass through the tunnel until 9 o'clock on the Monday morning, and passenger service was not resumed until the following day.

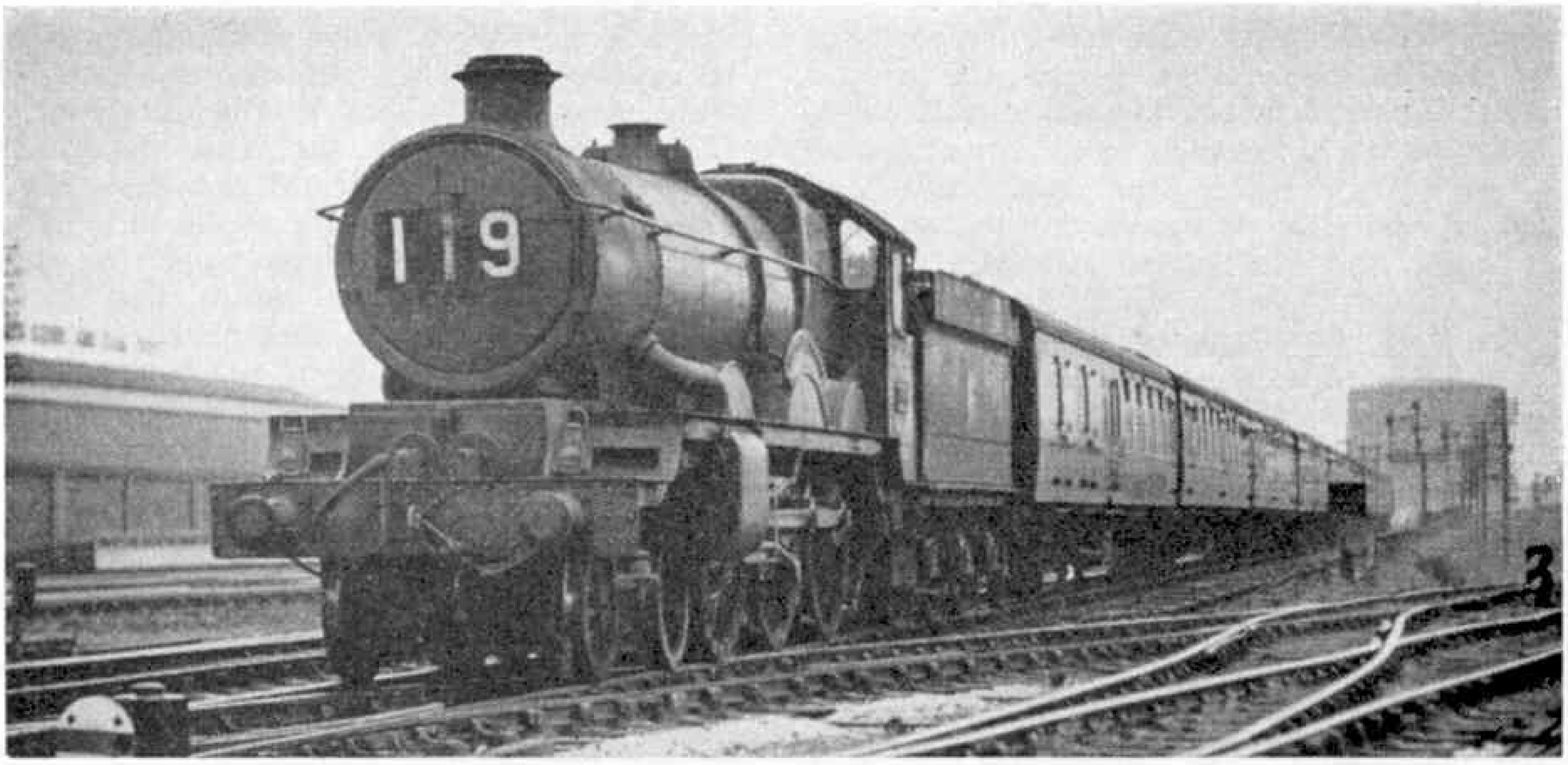
Fortunately the crews of the trains escaped, with the exception of the guard of the coal train that started the trouble. His body was discovered among the debris, along with another one, which proved to be that of a fireman of the Metropolitan Railway Company, who seems to have been travelling north with his friend, the coal train guard, unknown to the authorities. It was remarked at the time that here were two men who should not have been in the van when the fire broke out. The guard should have gone back to give warning that the coal train had been brought to a standstill, and his companion should never have been in the van.

The accident caused a good deal of alarm, because the newly-invented block telegraph system had been introduced on this section and had been widely praised as a sure means of preventing accidents. Probably the guard of the coal train thought it unnecessary to give warning, believing that his train would be protected by the block system. But the block signalling had failed in this instance. One good result of this astounding accident was that the code of communications was completely revised, and since then the block system has thoroughly justified itself.



**"The Heart of Midlothian" headed by No. 60154 "Bon Accord" leaving the north end of Welwyn North Tunnel. Photograph by S. Redhead.**

The two pictures on these pages show the north and south ends of the tunnel in which these extraordinary events took place. It is the northern of two tunnels at Welwyn, on the former G.N. main line from London. The presence of a Midland train was due to the fact that that company were then using the G.N. line between London and Hitchin; the St. Pancras line was not completed until two years later.




# A Castle Run

## From Paddington to Bristol on the Footplate

By "North Western"

MUCH has been written about the Great Western tradition, which has survived the grouping of railway companies in 1923, and the creation of British Railways in 1948, as a very live if not a tangible thing. This survival no doubt is due partly to the degree of continuity in its affairs that the G.W.R. enjoyed throughout these changes. One result has been that practically the same engine faces greet you over the buffer stops at Paddington as those seen 25 or 30 years ago.

I have always found Paddington a rather cheering place, and it was all the more so on one occasion last Summer when I arrived there ready to ride the footplate of the 9.5 a.m. to Bristol on my very first trip on a Swindon engine. The train, of 9 coaches, or 309 tons tare or about 325 tons full, was already in on platform 5, where I was greeted by Motive Power Inspector R. E. Pettifor and ushered on board the engine No. 5065 *Newport Castle*.

It was clear straight away that I was to travel in the company of enthusiasts, for Engineman W. Fribbence and Fireman V. Arthur were busy "squaring up" their footplate and getting ready for the *Right Away*. How these Western enginemen love their Castles! "*The Castle's a lovely engine*" I was told "*and rides well*"—the latter a point that is certainly appreciated by the footplate passenger.

To one more accustomed to the exits of Northern routes from London, the start out of Paddington is amazing. The route follows the Thames Valley, and there is barely a grade worth mentioning all the way to Swindon, although the line does rise gently almost throughout that distance. So we simply marched out of Paddington, with the engine chopping off its exhaust beats in the traditional Swindon manner, their steady rhythm accompanied by the vicious spit-spit of the vacuum pump.

**The picture at the head of the page shows the 9.5 from Paddington, headed by No. 5065 Newport Castle, approaching Reading on the run described in this article. Photograph by M. W. Earley.**

Boiler pressure was at the rated 225 lb. and the cut-off was progressively reduced while the regulator opening was widened. Twenty per cent. cut-off with the regulator rather more than three-quarters open seemed to be about the "cruising" setting, and by the first milepost we were already travelling at just over 40 m.p.h. Very different, this, from the hard labour that accompanies the starts out of. say, Euston or King's Cross.

There is a tradition about Western enginemanship and firing methods, and today I was to be lucky enough to see both carried out in the best possible manner.

As we sped out through Acton and passed the Ealings, over Hanwell Viaduct, and so through Southall "right time," I was given an object lesson in the light, but more or less constant firing that seemed to be ideal for the maintenance of steam pressure.

**A Bristol express entering Bath behind No. 4914 "Cranmore Hall." No. 7015 "Carn Brea Castle" waits on the centre track. Photograph by N. Ewart Mitchell.**

Each "round" of firing consisted of four shovels full, each well thrown where it would do most good, the fire being carried fairly high towards the rear end of the box. When about to put in a shovel full of coal a pull on the chain of the air flap caused this to drop out of the way and then another deft heave on the chain lifted it back again, so that an excess of cold air did not enter through the fire-hole while firing was in progress.

The coal on the tender did not look anything like the traditional South Wales steam coal that in the past was associated with Great Western engines, but Fireman Arthur told me that *Newport Castle* was one of the class that had been provided with modified draughting arrangements in the smoke-box, to permit more ordinary coal to be burned with success. This modification in fact I found was recorded on a metal plate inside the cab.

Weather conditions were not very good that morning, being damp and drizzly. Yet we were up to 64 m.p.h. at Hayes and passed Slough, 18½ miles out, at 9.27—22 minutes from the start—at 62 m.p.h. This energetic working put us before time at Maidenhead, where we sailed over the well-known flat-arched viaduct at 58 m.p.h. Running was easier through picturesque Sonning Cutting and soon the regulator was shut and we got a touch of the brakes ready for our halt at Reading. As we ran in through a shower of rain we were "shot" by the camera of that well-known *M.M.* photographic contributor, M. W. Earley, with the result shown in our first picture.

Another characteristic start took us out of Reading, whereby Reading West Junction was passed at 35 m.p.h. The starting cut-off of 60 per cent. had been reduced to 45, and so by degrees to 20 at Tilehurst, where we were doing 50 m.p.h.

The fire was in nice shape now and after passing Pangbourne at 55 m.p.h. and entering a chalky cutting the regulator was given just another half-inch. A long whistle proclaimed our approach to Goring Troughs, where we took water, the speed at this point being just 60 m.p.h. The weather generally did not improve as we forged our

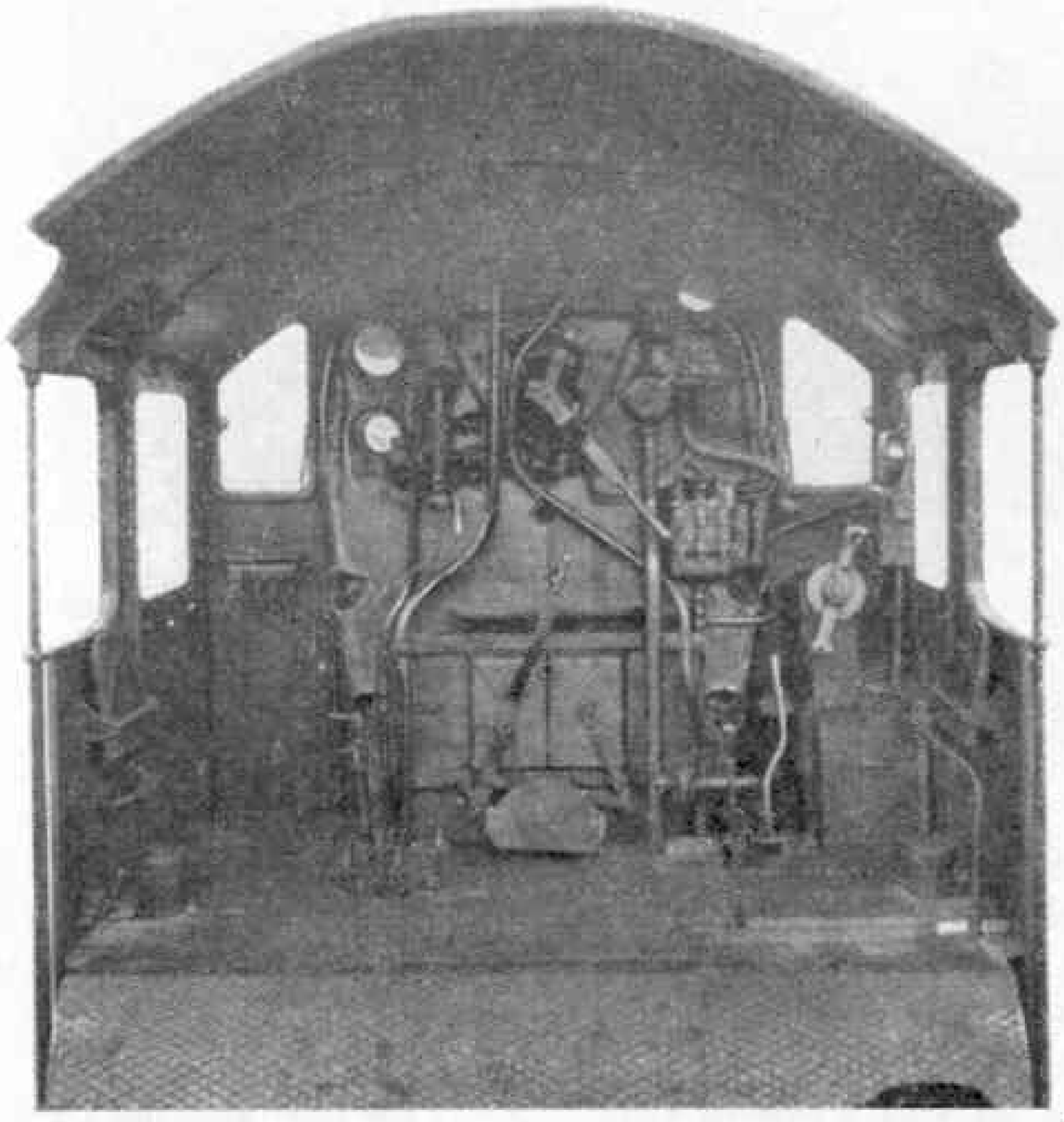
**No. 5063 "Earl Baldwin," of the Castle class, emerges from one of the picturesque ends of Twerton Tunnel. Photograph by R. E. Toop.**

way westward, building up a small reserve of time that was to prove useful later on. Didcot was passed at around 64 m.p.h., then came Steventon, where there was a goods held in the loop and headed by one of the familiar, but not very popular, W.D. 2–8–0s. Hereabouts the two roads forming up and down tracks are set fairly wide apart—one result of the original G.W.R. broad gauge and the subsequent conversion.

Challow with its typical "Western" signals came in sight, then by Uffington we were curving to the left and at Knighton Crossing another Castle heading for London passed by. Shrivenham, at 60 m.p.h., was greeted with two long whistle blasts and a crow whistle to indicate to the signalman that we were not scheduled to stop at Swindon, and soon after a long whistle heralded our approach to the famous railway town. We passed through the station observing a 15 m.p.h. slack, and I got my first view of the famous "Engine Factory" with its dignified grey stone buildings. I had brief glimpses of a line of tenders waiting repair, a blue-clothed boiler from a King 4–6–0 and other locomotive items to one side of the track, while on the other restaurant cars and carriage underframes were among some of the things to be seen.

Approaching Hay Lane Box we went gently and whistled long, for a permanent way slack had been in force there and evidence of the handiwork of the permanent way gangs was seen in the new sleepers and new ballast that had been put down to welcome us. Easy travelling continued to Wootton Bassett and then, after the junction box and over a really splendid length of track, the regulator was opened almost to the full so that we accelerated rapidly; 60, 65, 70, 75 and then 80 m.p.h. down to Dauntsey. This part was really thrilling and the riding of the engine gave ample proof of Inspector Pettifor's claim that the "Castle" engine "gives to the road so smoothly."

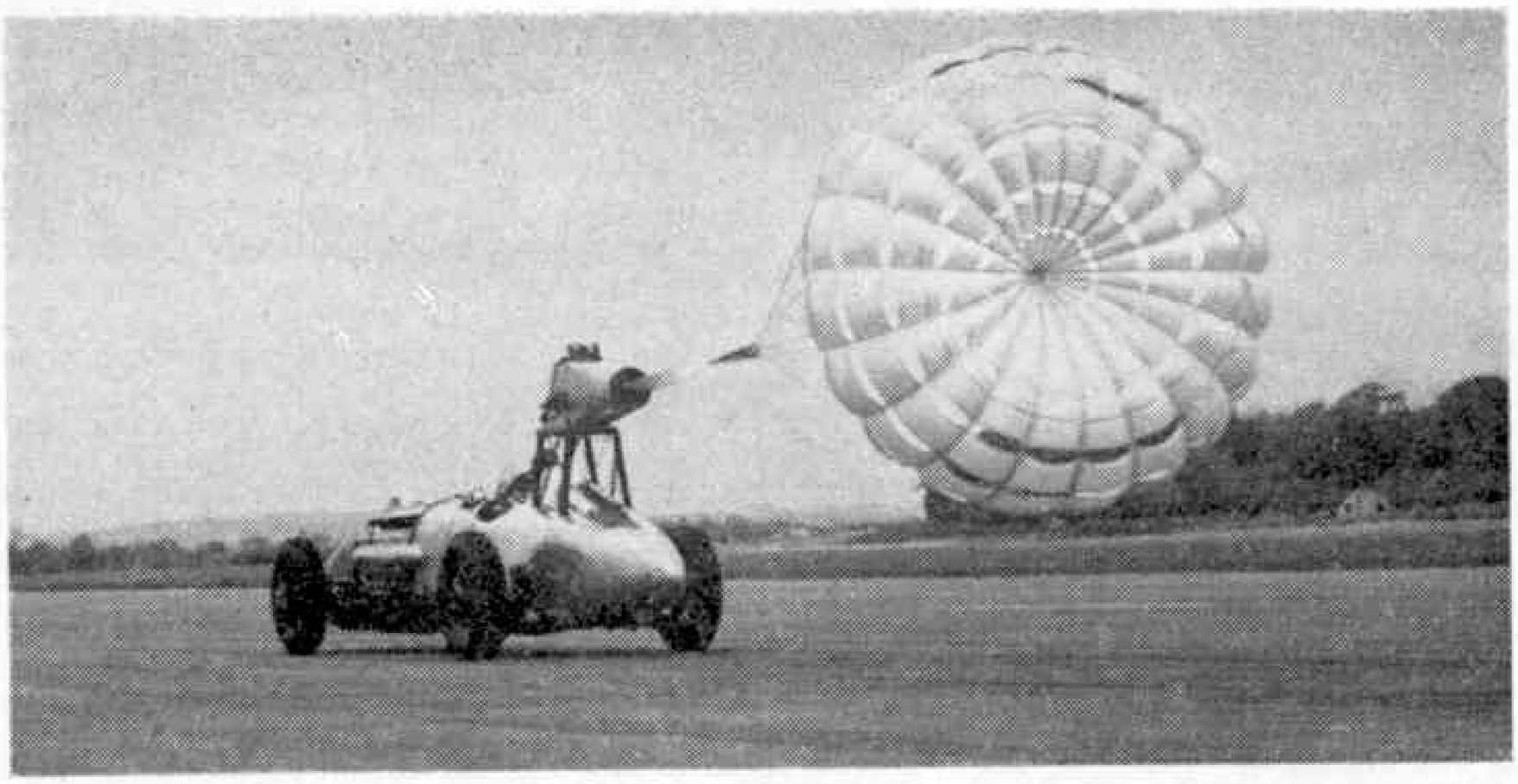
All this time I have omitted to tell you how our progress was marked by the welcome ringing in the cab of the bell that forms part of the Automatic Train Control apparatus that has long been standard equipment on the Great Western. Briefly, before each distant signal there is a ramp between the rails. This makes contact with a shoe on the locomotive and when the signal is at "clear," current from the track ramp is picked up by the shoe to ring the bell that forms part of "our little friend in the corner," as the enginemen describe the A.T.C. installation.



**The footplate of a Castle locomotive, showing the simplicity of Western Region locomotive controls. Photograph by courtesy of British Railways, Western Region.**

When a distant in the caution position is passed there is no current from the ramp, and a siren is then sounded in the cab and the brakes are applied. When running in fog and difficult weather conditions this apparatus must give the enginemen considerable help; it is a wonderful safeguard against the possibility of human error at all times.

Chippenham came and went and we had a slight check approaching Thingley Junction. Opening up again produced more typical Swindon engine music from our Castle's chimney and so we got along to Corsham, a little old looking station where a 15 m.p.h. slack was in force. Box Tunnel loomed ahead. Fireman Arthur lit the gauge lamp and then we were in this remarkable bore and quickly accelerating. In the ruddy glow from the fire-hole the footplate seemed to be peopled by demons as we shot down the 1 in 100 and out again into the open before shooting through the classic portal of the short Middle Hill tunnel. Then through a cutting and between retaining walls arched at intervals we ran into Bath Spa Station. The engine came to a stand just over the river and during our brief stop I was able to see something of the delightful situation of the city cradled in a (*Continued on page 122*)



**7 ft. diam. parachute fully inflated, slowing down the big Napier Railton car used for testing G. Q. parachutes. Photographs by Cyril Peckham.**

# Parachute that Packs Itself

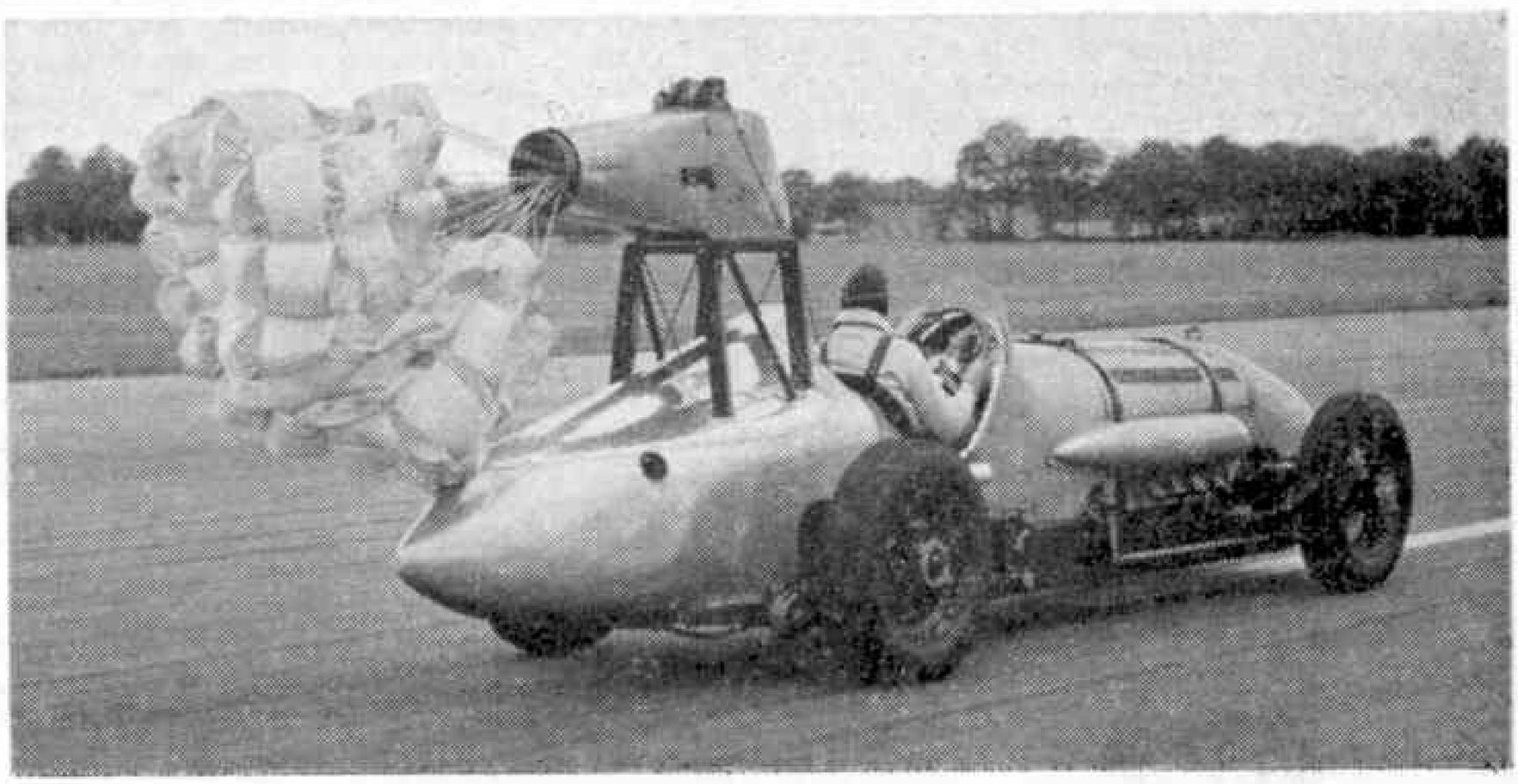
By John W. R. Taylor

FEW racing cars have had a longer or more successful life than the big Napier Railton illustrated on this page. Built 22 years ago for the late John Cobb, it broke its first lap record at Brooklands in 1933 and, altogether, has held 47 speed records in its time. Now, down at Dunsfold aerodrome, it is helping to make landings easier and safer for the pilots of high-speed aeroplanes, by testing new types of brake parachute designed by the G. Q. Parachute Company, of Woking, Surrey.

Most modern fighters, bombers and research 'planes have to use tail braking parachutes to help reduce their landing runs; otherwise they would often be unable to get into airfields with normal length runways. Unfortunately, it is an expensive business, because if the parachute begins to drag along the ground when the aircraft slows down, it will very soon become worn out. Even if it is jettisoned before it starts to drag, it can be damaged easily; and another disadvantage is the time taken to re-pack it in its container before the aircraft can take off again.

So, early in 1951, the G. Q. Company began work on a new type of brake 'chute that would solve both problems by packing itself back in its container as soon as the aircraft had slowed down to a predetermined speed. Before the end of the year, the Ministry of Supply were sufficiently interested to issue a specification for a 'chute that would open within three seconds of the pilot operating the control, be stable even in a 20 knot cross-wind, remain deployed until the aircraft's speed had dropped to 30 knots, and then retract automatically in about 15 seconds.

The G. Q. 'chute, which meets these requirements, is stowed in a telescopic cylinder, so designed that the rear and outer part slides forward over the inner part at the same (*Continued on page 164*)



**Here the parachute is seen deflating prior to being automatically pulled back into its telescopic container.**

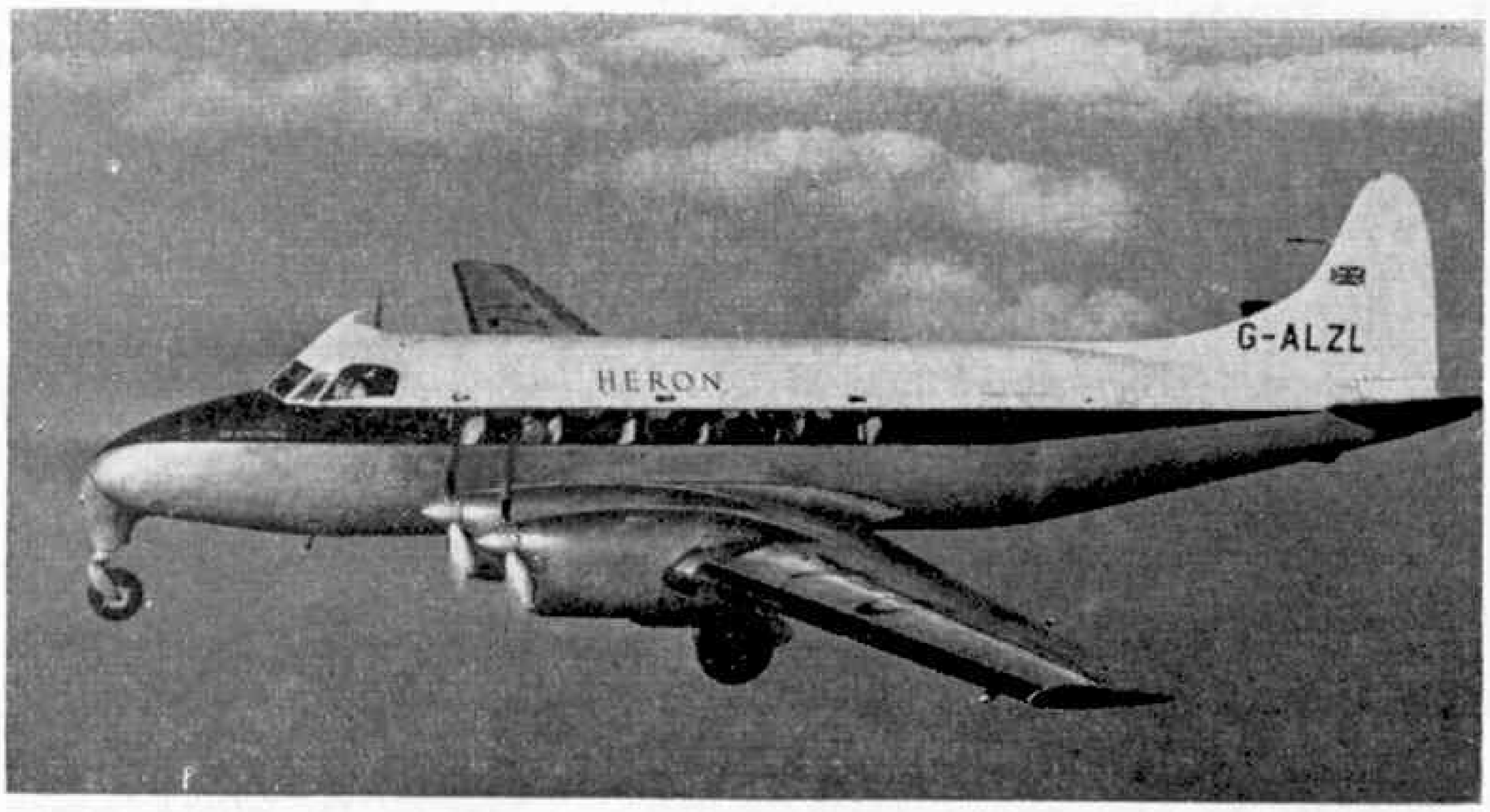
# Air News

By John W. R. Taylor

### Herons for Ambulance Service

B.E.A. have bought two de Havilland Heron Mk.1 light transport aircraft for service with the Corporation's Air Ambulance Unit, based at Renfrew in Scotland. They replace the veteran Rapide biplanes, which have flown more than 2,550 sick and injured persons from the Western Isles and other remote and inaccessible places to hospitals on the mainland in the past eight years.

Introduction of the Herons will enable the Unit to perform its arduous duties even more efficiently, and will offer much greater comfort for the patients. Instead of the usual 14 passenger seats, each aircraft is equipped to carry two stretchers, and special doors ensure quick, easy loading and unloading. The tricycle undercarriage is also an improvement, as it ensures a level floor, which is particularly important when serious cases are being carried aboard.




**A de Havilland Heron Mk.1, the type bought by British European Airways for their Scottish Air Ambulance Unit.**

Powered by four 250 h.p. Gipsy Queen engines, the Heron's quick take-off ability and short landing run enable it to operate from the short grass strips and beaches that are the service's "airfields". Its simple, rugged, all-metal structure and fixed undercarriage demand a minimum of maintenance; and its cruising speed of 165 m.p.h. ensures a speedier service than with 117 m.p.h. Rapides.

The Herons belong to B.E.A.'s "Hebrides" class and are named after famous Scottish medical pioneers. Thus G-ANXA is named *John Hunter* and G-ANXB is *Sir James Young Simpson.*

### Combating Ice Formation on Aircraft

A revolutionary new type of electric heater to protect aircraft from ice formation has been invented by the British Napier company. The big problem is to protect curved surfaces such as propeller spinners, wing leading edges and air intakes without adding too much weight or changing the shape of the components.

Napier heaters fill the bill perfectly, being only one-twentieth of an inch thick, with a weight of less than 4 oz. per sq. ft. of surface protected—and they can be sprayed like paint! First a layer of insulating resin is applied to the surface to be protected. Then a metallic electrical conductor is sprayed on to the resin. Terminals are fitted to connect with the aircraft's electricity supply; and finally an outer layer of resin is sprayed on and highly polished. The degree of heating can be altered by varying the thickness of the conductor. Nothing could be simpler, and Napier de-icing systems are already used on the Britannia, Comet, Gannet, and many other aircraft.

### Gnat's Engine Tested

Although detailed design work on the Bristol Orpheus turbojet began little more than a year ago, the engine has been undergoing running trials since December and much of the development work has already been completed. Its weight has proved to be even lower than expected in the early stages.

No details of the Orpheus have yet been given, but it is reported to develop 4,850 lb. of thrust and to be extremely light. One will be fitted in the prototype Folland Gnat lightweight fighter, which is due to fly this summer, and will almost certainly enable the aircraft to go supersonic in level flight.

### Features of the Martin Marlin Flying Boat

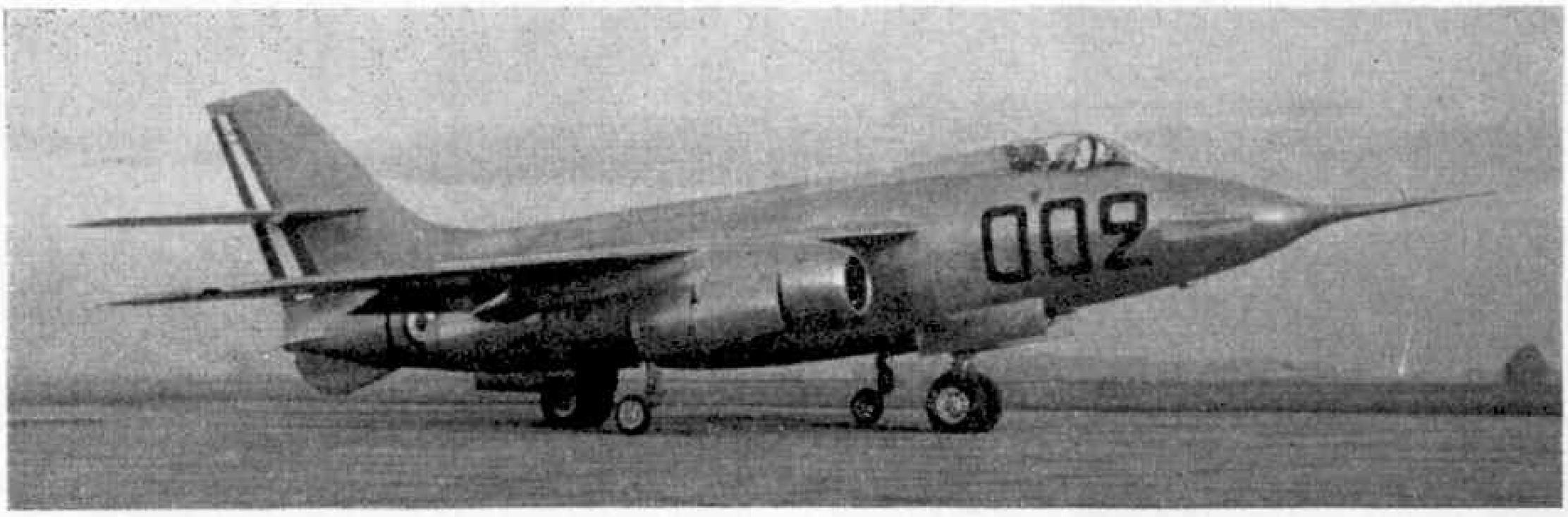
The big, twin-engined Martin P5M-2 Marlin flying boat carries in its bulbous nose the most powerful tactical radar in any U.S. aircraft. It is in service with the U.S. Navy for high-priority anti-submarine duties, and the P5M-2 is certainly one of the most formidable warplanes in the world.

Two 3,250 h.p. Wright Turbo-Compound engines give the P5M-2 a top speed of about 275 m.p.h.; but its most important feature is an endurance of 20 hours. A flying boat is, of course, ideal for such long patrols, as there is plenty of room inside the hull for galleys, rest rooms and other conveniences. Gull wings keep the propellers clear of spray for take-off, and the P5M-2 also has a distinctive "T"-tail. Torpedoes, mines, depth charges and bombs are carried inside the large engine nacelles. Rockets, sono-buoys and a searchlight can be mounted under the wings.

### Another Silver City Ferry Service

On 1st May Silver City Airways will open yet another cross-Channel vehicle ferry service, this time from the Birmingham Airport at Elmdon to Le Touquet in France. Vehicle fares will be only double those on the regular Ferryfield–Le Touquet route, although the distance is about five times greater. Flying time will be 90 min.; which means that a driver from Manchester could be in Paris eight hours after leaving home.

Last year was a record one for the air ferry. Over 126,000 passengers and 42,500 vehicles were flown, compared with totals of 96,625 and 39,041 respectively in 1953. Each of the Company's fleet of Freighters and Superfreighters averaged 2,970 take-offs and landings. Fares will be even lower in the coming season, and a bicycle can be flown to France for as little as 2/6.




**Second prototype of French sweptwing SO.4050 Vautour.** **(See special article on French Aircraft on pages 114-16).**

### Paper Parachutes

Radio-sondes, the balloon-borne radio transmitters which automatically send back weather reports from heights up to nearly 100,000 ft., are now being brought safely back to earth by parachutes made of crepe paper. The 'chutes cost only one-fifth as much as the cloth type used previously.

The economy was introduced only after the new parachutes had been thoroughly tested; because, obviously, there must be no risk of failure in any kind of weather, particularly rain. Nobody would welcome the arrival of a radio set through his roof after it had dropped 18 miles! Colour was also important, because although only 4½ ft. in diameter, they could be mistaken for man-carrying 'chutes in certain circumstances and cause a search to be started. So they are coloured green to avoid confusion.

High altitude weather soundings are made four times a day from eight stations in Britain and from the two British Ocean Weather Ships. As well as the radio-sonde equipment, which is used on only two of the daily ascents, a radar reflecting aerial is carried under the balloon, to enable ground operators to plot wind speed and direction. These reflectors too are brought to earth by the parachute after the balloon bursts. Anyone finding a radio-sonde and returning it to the Meteorological Office receives a small reward—so watch out for those small green paper parachutes!

### The Saab Safir

Latest version of the popular Swedish Saab Safir lightplane is the Saab-91C illustrated below. Powered by a 190 h.p. Lycoming O-435-A air-cooled "flat six" engine, it is normally equipped as a four-seater; but can be used as an ambulance 'plane, with accommodation for a stretcher and medical attendant. By removing the rear seats, it can also carry a quarter of a ton of freight for 560 miles at a cruising speed of 150 m.p.h. All-up weight is 2,686 lb.

The earlier Gipsy Major-powered Saab-91A and Lycoming-powered Saab-91B are three-seaters, and are in service in 12 different countries, mainly as military trainers. They are, for example, the standard "primaries" of the Royal Swedish and Imperial Ethiopian Air Forces, and have recently been ordered by the Indonesian Government. In this role, they can be equipped with two machine-guns and light bombs or rockets, for weapon training.

### TV Fire Alarm

De Havillands are using a Pye television system to watch for any outbreak of fire in or near a jet engine that they are flight testing in the bomb-bay of a test-bed aircraft. The TV camera is controlled by the navigator and is focused so that it can watch the test engine in complete darkness through a heat-resisting glass window. So long as a small screen on his instrument panel remains blank, the pilot knows that all is well. As a double check, a red light on the navigator's control panel shows that the camera is working properly.

### More Flying Boats for Aquila

Aquila Airways have bought three 44-seat Short Solent 4 flying boats, used until recently by Tasman Empire Airways on their highly-successful service linking New Zealand with Australia across the Tasman Sea.

These particular Solents, which are generally regarded as being the most comfortable air liners in the world, will double Aquila's fleet. The expansion is timely, for the airline is due to open new weekly non-stop services from Southampton to Genoa and Santa Margherita on the Italian Riviera in June. These will be in addition to regular services to the holiday resorts of Madeira, the Canary Islands and Capri.

Aquila have also applied for permission to operate an all-freight service to Australia.

**The Saab-91C shown here is the latest version of the popular Swedish Saab Safir light aircraft.**

**John Lamb, O.B.E., author of the book reviewed on this page.**

# The Life of a Marine Engineer

TO the boy in whom a love of machinery is combined with a longing to "go to sea", the career of Marine Engineer is ideal; and if he is also ambitious he may well rise to the top of his profession. This was the experience of John Lamb, O.B.E., who began as a Mechanical Engineering apprentice when barely 15 years of age and eventually became Chief Marine Superintendent of one of the largest oil shipping companies in the world. And he has told his story in *Backward Thinking*.*

Fifty or so years ago factory and workshop conditions were rough and working hours long. Lamb relates that in the engineering works where he served his apprenticeship the employees brought home-brewed tea with them "in a tin bottle or can" and warmed it up when wanted. But woe betide the unfortunate apprentice whom the foreman caught tea-warming!

After five years' apprenticeship Lamb joined his first ship, the s.s. *Duffield*, as Fourth Engineer. She was a freight steamer of about 6,000 tons capacity, with cramped crews' quarters and dirty. He soon found that also aboard were hundreds of rats and, when she reached warmer climates, "millions of bugs and cockroaches." In those parts of the world the temperature in her stokehold remained around 120° Fah., and it was in these conditions that her Engineers had to carry out urgent engine repairs.

He was only in his mid-twenties when he accepted the offer to serve as Second Engineer in the m.s. *Sebastian*, a new ship then building. She was a twin-screw vessel, and her "2,000 h.p. main engines were of the two-cycle type designed to run at 160 r.p.m." Lamb had not had any experience of running diesel engines, so—thinking forward—he spent the few weeks' waiting time until the ship was ready getting all the information he could about them. Later experience in motor ships equipped with other types of engines further widened Lamb's experience, and many times he proved his ability to cope with emergencies.

There were lighter moments of course, as when, soon after the first World War, he was sent to Singapore to see if he could repair the machinery of several motor ships "which had been run to a standstill." He decided to repair the ships himself, with the help of native labour, and "moved in" aboard one of them, with a gang of Chinese fitters and Malay coolies. The ship was so over-run with vermin that when his Chinese valet asked permission to "Go shore-side and catchee one piece cat" he quickly agreed. The valet returned a few hours later with a forlorn looking cat that did not look strong enough to even chase a rat.

Early next morning, relates Lamb, "I was awakened by excited cries from the natives, and at first thought that a mutiny was well under way. I rushed out on deck to find the natives running to and fro and looking under pipes and other deck fittings, and every now and then throwing small black objects overboard. The black objects turned out to to be dead rats." The cat cleared the ship of the pests in about two weeks, made friends with his dog Tubby, and finally took to accompanying Lamb and his dog ashore, to the amusement of the natives.

In the early 1920's Lamb forsook the sea on being appointed Assistant Superintendent Engineer of The Anglo-Saxon Petroleum Co. Ltd. One of his earliest tasks ashore was to stand-by during the construction and testing of a large double-acting diesel engine weighing 600 tons being built at Wallsend-on-Tyne, which was the first engine of its kind. One of the problems that developed during testing was the "breaking of the pipes in the piston rods used to convey the cooling water to the fast moving pistons." These pipes were 10 ft. long, of 2" diam. and of bronze.

Stainless steel pipes were tried, but in vain, and it was at this stage that the famous metallurgist, Dr. Hadfield, became interested. After three weeks' intensive research in his laboratory, he produced a steel that could withstand the drastic conditions in the pistons and retain its brightness. This valuable discovery was the now famous *Staybrite*.

From 1940 until the end of the second World War Lamb was Chief Marine Superintendent of The Anglo-Saxon Petroleum Co. Ltd. It was a technical panel under his chairmanship that evolved a fire-proof wooden lifeboat at a time when oil tankers were being lost by enemy action.

**"Caught by the foreman making tea."**

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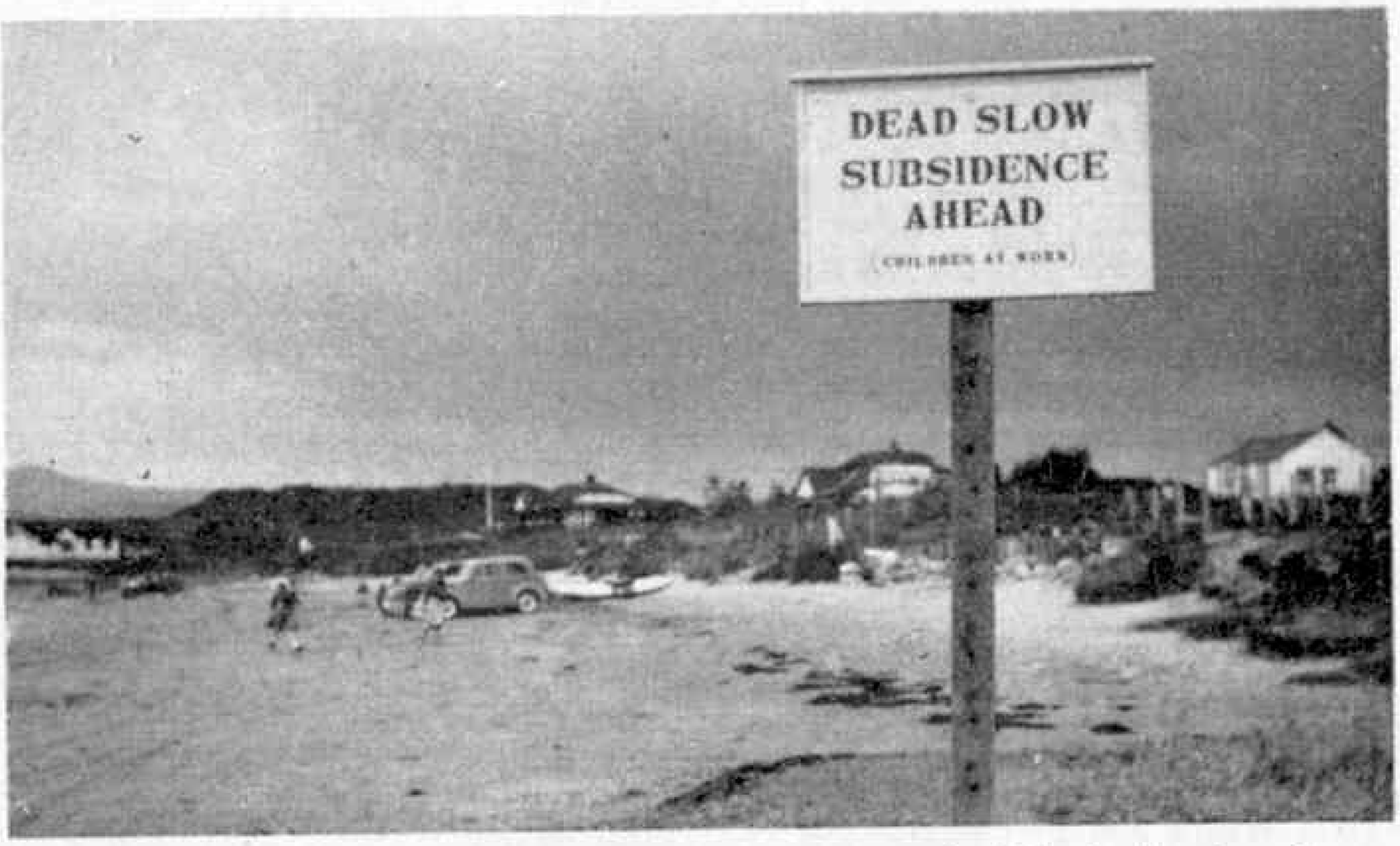
* *"Backward Thinking." Published by John Lamb Publications and Inventions Ltd., 44/45 Billiter Buildings, Billiter Street, London E.C.3. Price 10/–, plus 6d. postage.*

# MECCANO MAGAZINE

## Junior Section

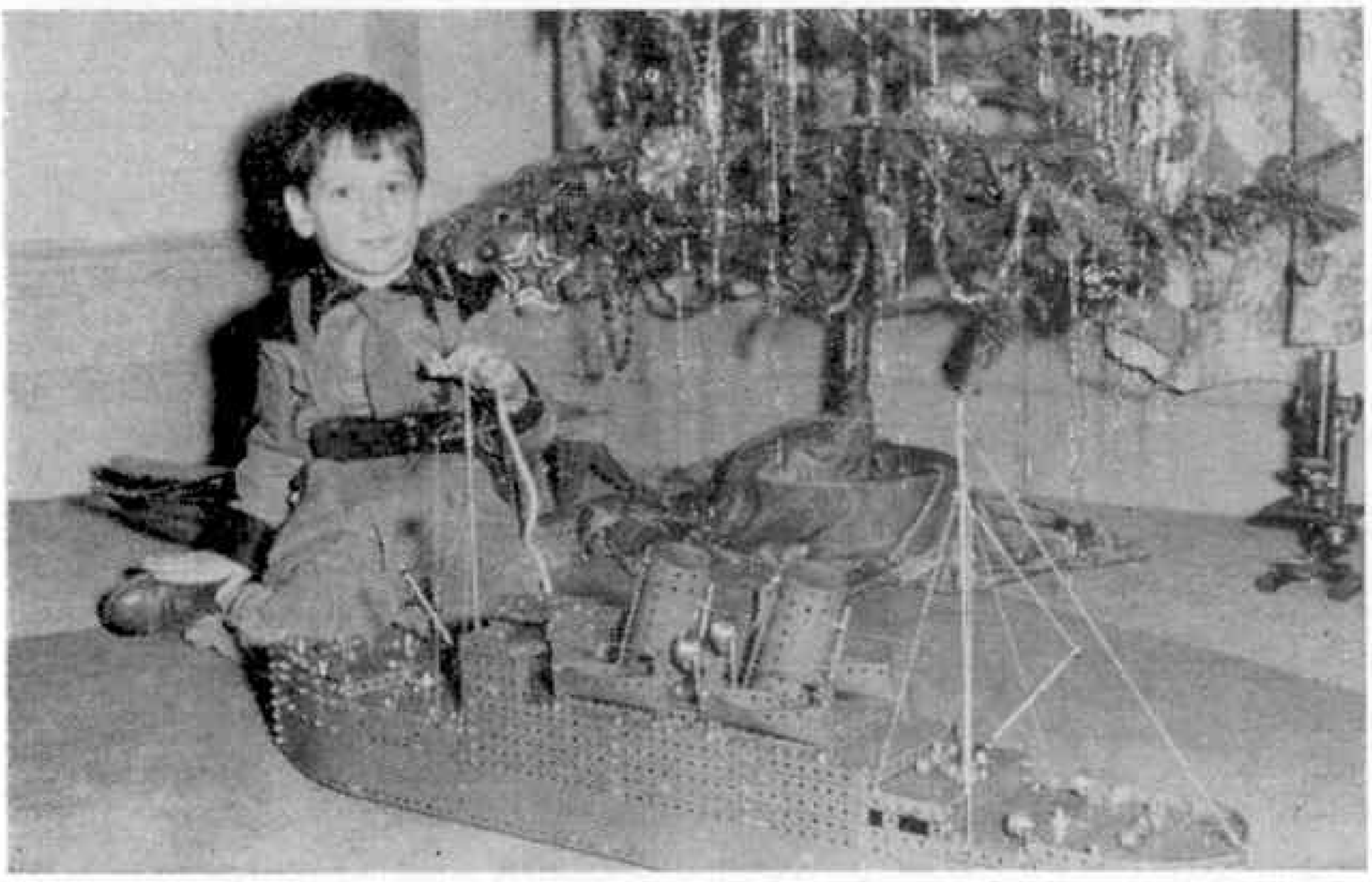
WELL, here we are with the first of the Junior Sections of the *M.M.* I am beginning with a picture conveying a warning to everybody not to cause any disturbance when you are reading it—if of course you count yourselves as children! I do not see why not, and indeed the only thing that I can see wrong with the picture, as far as readers of the *M.M.* are concerned, is that "work" is not really the right word. At least, I hope not.




**A stern warning! The subsidence threatened may be a sand pit dug by beach engineers, but in any case the engineers themselves must not be disturbed while at their urgent tasks. This photograph was taken at Sandgreen, Gatehouse-of-Fleet, Galloway, by F. D. Head, Worcester.**

I wonder how many of you recognise the scene itself. Actually it is Sandgreen, Gatehouse-of-Fleet, which is in Galloway, Scotland. Motorists are warned in no uncertain terms about their manner of making the crossing. It is to their advantage too to be careful, for sand pits dug by the civil engineers at work form traps for the unwary.

This is an excellent instance of co-operation. Of course there is nothing like co-operation, whether in model-building, miniature railway operation or indeed any activity. Think of the beaver, for instance. When mining engineers started to build a small dam across a creek in Canada recently, the beavers—the "resident" engineers—disliked the idea so much that every night they just undid the work of their rivals. When the engineers began again, in what the beavers thought the right place higher upstream, they joined in building the dam!



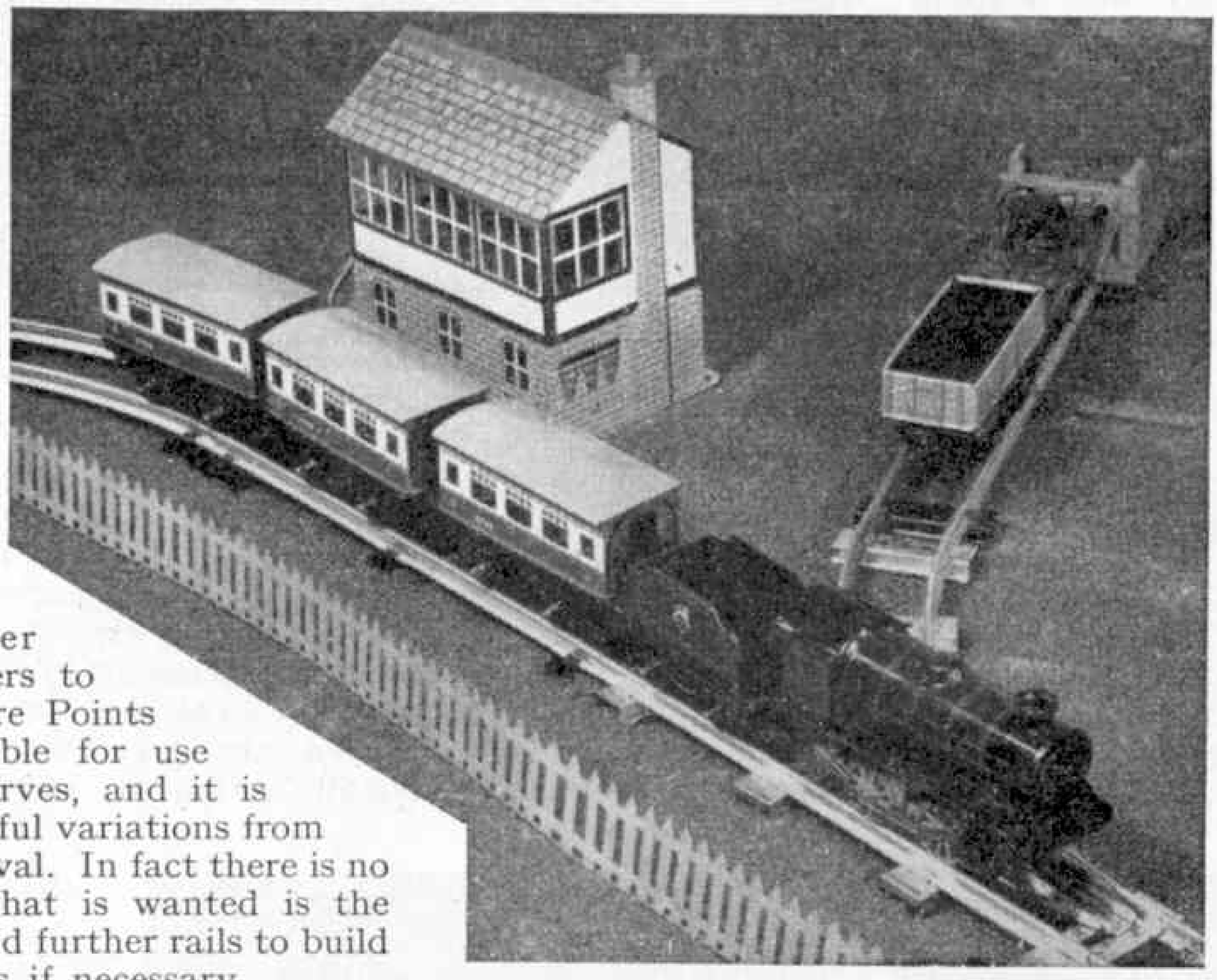
**The Christmas air in this picture is a bit late, but the combination is irresistible—a well decorated Christmas tree and a fine Meccano model of a liner, with Harry B. Elam, New York, who helped to build the model and is a regular M.M. reader.**

# Our Hornby Railways

By "Tommy Dodd"

THOSE younger readers who have recently begun the Hornby Railway hobby, or who are just beginning it, will be glad to hear that their needs will be given special attention in these additional pages, which are to form a permanent feature of the "*M.M.*" On them I hope to talk about railway working on the simpler types of layouts, using the more elementary equipment of the No. 21/21 and of the M1 Train Sets, and of course to suggest ways and means of extending them and making train operations more and more interesting.

Now that the Nos. 20 and 21 and the M1 Train Sets are provided with 1 ft. radius curves, the layout position becomes somewhat easier for younger Hornby Train owners to follow. For there are Points and Crossings suitable for use with 1 ft. radius curves, and it is easy to work out useful variations from the usual standard oval. In fact there is no "work" in it! All that is wanted is the addition of Points and further rails to build up sidings and loops if necessary.



**A Hornby No. 20 locomotive with a three-coach train dashes past a siding, where a Wagon and a Crane Truck of the No. 20 kind are standing.**

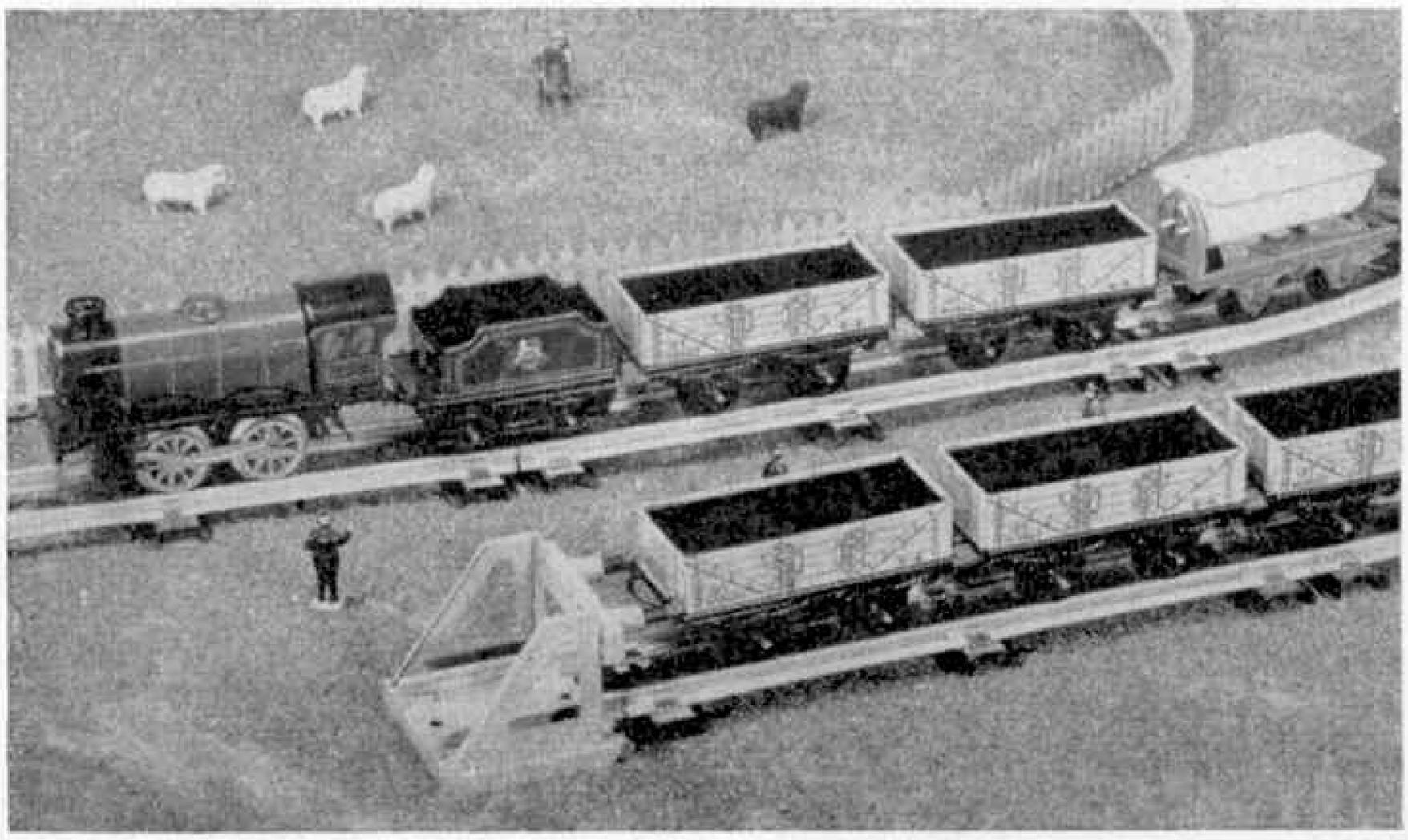
How easily this can be done is shown by the pictures on these pages. The addition of even one set of Points, and an extra rail or two, adds enormously to the fun, and additions to the simple layout with which we nearly all begin working our trains actually suggest themselves.

In the first picture the main system has been lengthened by adding Straight Rails on each side of the oval, and there is a short siding from the main track that ends in the standard Buffer Stops. Even if this siding does **not** hold many vehicles it is at least a **start.** In this case it accommodates a Wagon and the Crane.

You will see that the siding is finished off correctly by means of Buffer Stops. This can be modified if necessary when further additions are being made, as it is practically certain that they will be.

In addition to just plain sidings, loop lines and other variations can be made with the standard curves and Points. When buying further track parts you must see that these are of the correct type for the Set you have. The No. 20/21 and the M1 Train Sets include 1 ft. radius curves, and in order to be sure that the layout will work out satisfactorily, you must have 1 ft. radius Points and Curves when you are adding to your equipment. Crossings have a relationship to the curves on a layout and they are referred to as being suitable for 1 ft. radius or 2 ft. radius layouts in our price lists and catalogues. You must be quite certain about this; otherwise you may be disappointed to find that the layout you want to fix up will not fit together correctly.

The trains themselves of course can be extended and varied, and most owners soon want to do this. An important point is that additional rolling stock is available in the



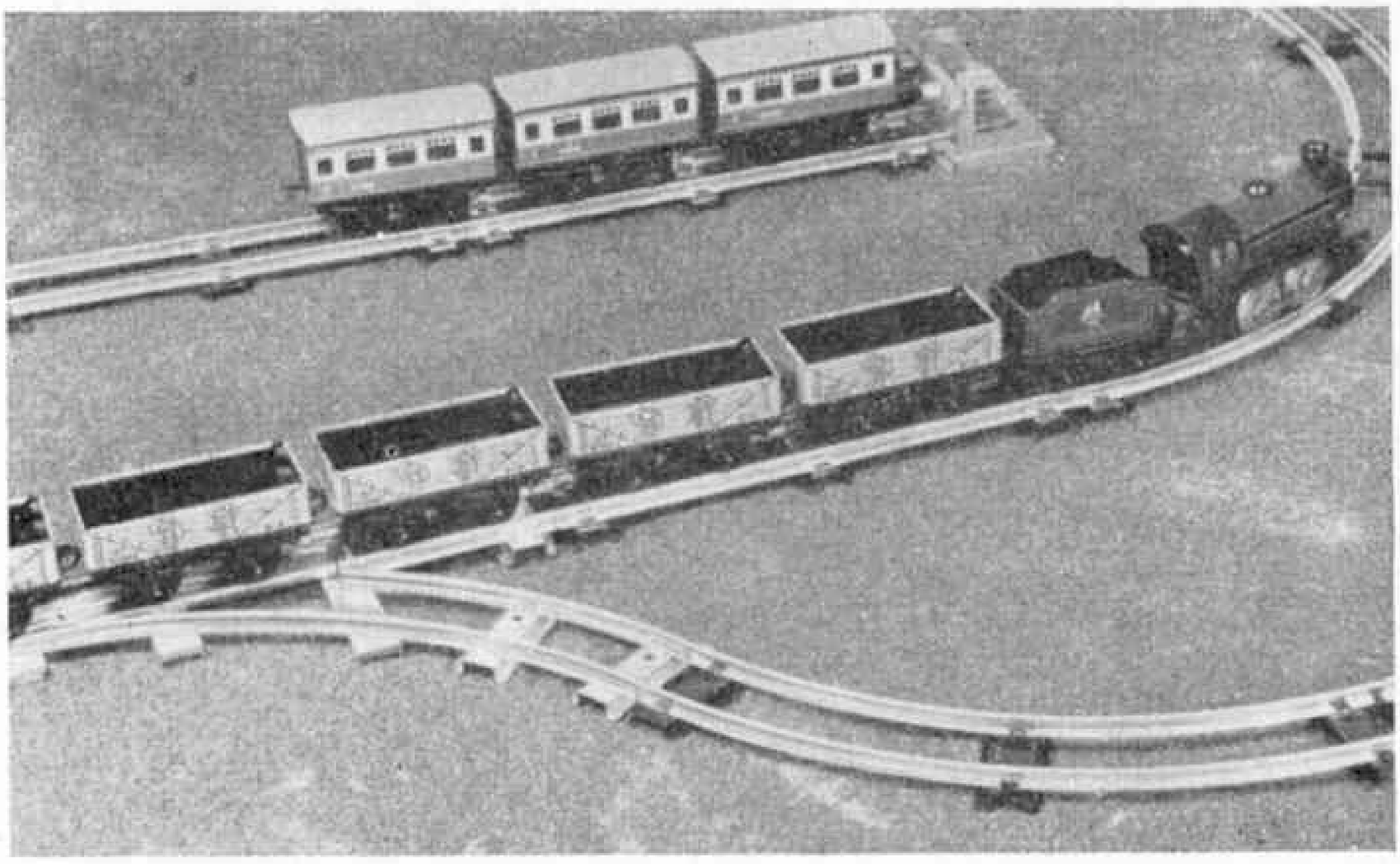
**An empty wagon train, including No. 20 Tipping Wagons, makes its was along the track, passing the field where the Dinky Toys Shepherd and his sheep are standing.**

same style as the No. 20/21 Trains with which many railways begin. So you can soon build up quite a respectable train.

The vehicles concerned correspond with those included in the train sets, as is suggested by the three pictures here. They are of similar proportions and have the same type of simple tongue-and-loop coupling. Even with this simple equipment train running can be quite fascinating and realistic. Hooking up and detaching coaches or wagons has to be done by hand, but in our younger railway days we do not mind this sort of thing. After all, on real railways the shunter in the goods yard still finds uses for his pole!

Nowadays, even the simplest railway quickly develops a certain amount of lineside interest. There are few homes without Dinky Toys, and most of you know how well many of these can be used in conjunction with a railway layout. We will have to have another talk about this in these pages later on. For the moment you will notice Dinky Toys sheep in one picture, and there are also one or two railwaymen in the same illustration.

With regard to actual running I hope that most of you follow carefully the instructions that go with every Hornby Train Set or Locomotive.



**The use of Points makes possible all sorts of interesting siding and loop line arrangements. Here the train continues along the main line over the Points that lead to a running loop.**

With the rails properly clipped together by Rail Connecting Plates —even if the track does have to be on the floor—and with the engine and rolling stock in good order, there is no reason why train running with our simple equipment should not be just as enjoyable as with larger models. If anything does mar your enjoyment write to tell me about it.

Again, the No. 20 Locomotive, which is common to both No. 20 and 21 Train Sets, is not reversible, our train services have to be arranged accordingly. Continuous layouts are therefore popular, as on these an engine can always be kept "right way round" for hauling its train.

# DINKY NEWS

By **THE TOYMAN**

## Sports Car Racing in Miniature

SPORTS car racing and motor rallies are aspects of motor sport to which I have not given much attention so far, but this month I am showing pictures of realistic corners of a special layout I made to provide a track for the new Cunningham C-5R Road Racer, Dinky Toys No. 133. This is a lovely model, of a kind that is a striking example of the modern trend in sports car design, with a low beautifully streamlined body and headlamps built into the fairings over the front wheels. Just how well the Dinky Toy has captured the lines and the impression of speed and power of the original car you can judge from the picture in colour on the back cover.

Two of the pictures show the Cunningham in action on my layout, while the third is a close-up that reveals in full measure the striking lines and splendid proportions of the new model. The blue bands running fore and aft over the body stand out well. There are also the usual identification numbers on the bonnet and the doors. A driver—on the left, of course—and a transparent windshield are other outstanding features, and I am sure every enthusiast will be delighted with this new Dinky Toy.

So much for the actual model, and now for some hints on how to make the best use of it. A suitable track is the first essential, and for this preliminary work can be carried out in the usual way, using cloth or paper for the base. The track need not be very big, but remember that fast cornering is one of the outstanding features of modern sports cars; so take care to provide the "drivers" with plenty of bends and curves to display their abilities in this direction. The road can be marked by sprinkling gravel and sand on the base material, with walls and railings placed at suitable points.

The fencing seen in one of my pictures is made from ordinary corrugated paper. Cut this into suitable lengths, then make a series of vertical slits in the plain sides opposite to the corrugations. Now stretch

**A scene of activity at the pits during a road race on a miniature layout is shown in the illustration at the head of the page.**

**The new Cunningham C-5R Road Racer, Dinky Toys No. 133.**

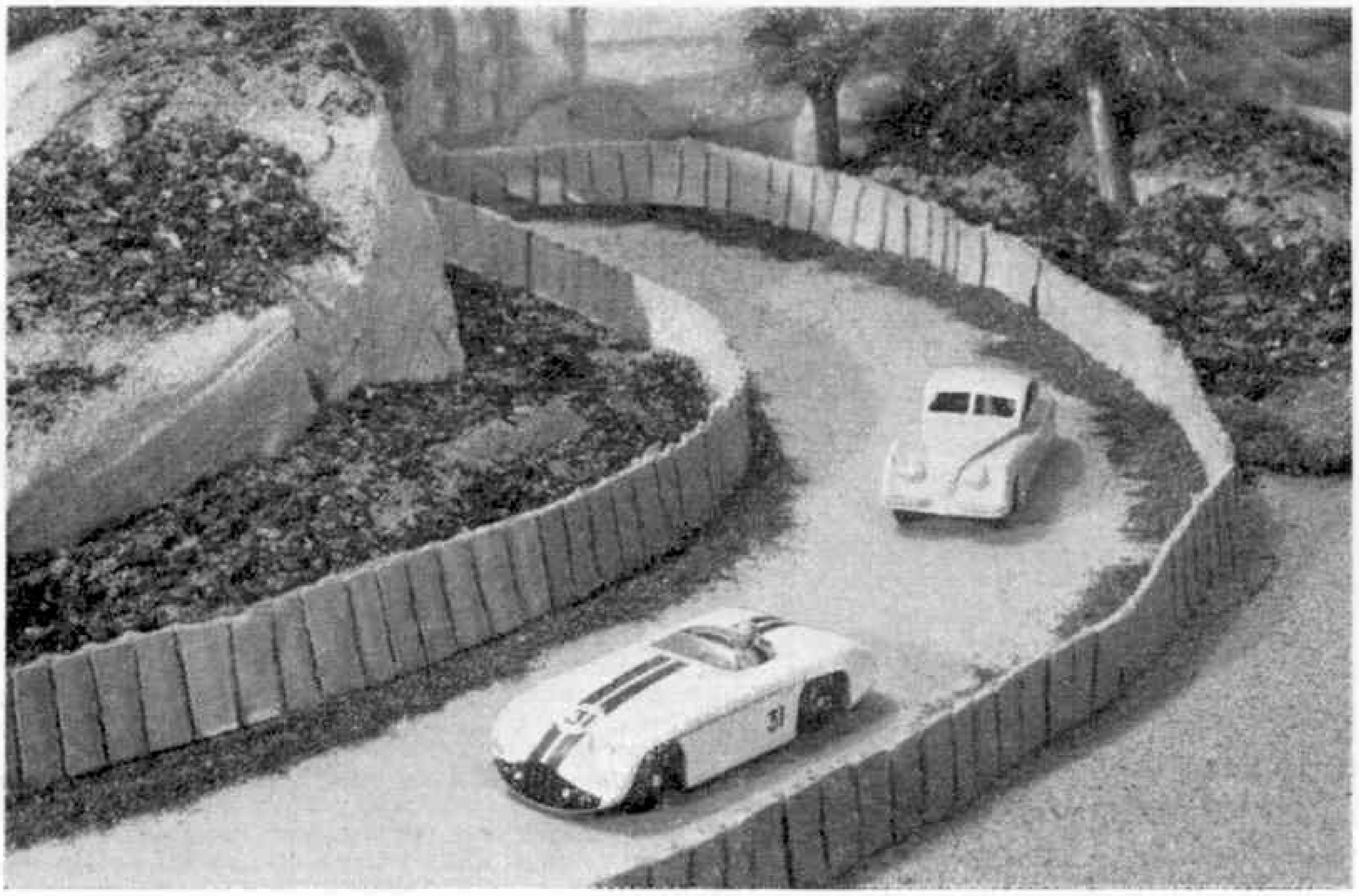
each length slightly to separate the slits and you have railings that can be shaped to any curve and are easily pinned in position.

The miniature trees add an air of realism to the scene and these also can be made very easily. Take a piece of ordinary household steel wool and shape it round a twig of suitable size. Now dip the assembly in green paint or dye, and when it is dry you will have a most realistic tree to add to the scenic effect of the layout.

In one of the pictures you will notice I have provided pits for the cars in the race. This is not really essential in small races over short distances, but in many big events manufacturers enter two or three cars that operate as a team, and usually in these cases service pits and crews are provided to look after the cars. Some race enthusiasts may object to my placing the pits on a bend, but this happened to be the most convenient position on my layout! If you can arrange the pits on a straight stretch of road, so much the better, but after all the main point is to have as much fun as you can in the space available to you.

You will notice I have a team of two Cunninghams, and of course the model is available with only one identification number. This is not really important in miniature, but if you wish it is a simple matter to mark suitable numbers on white paper and to paste them temporarily over the original markings.

The Jaguar XK120 shown in my pictures makes ideal opposition for the Cunningham, but I am sure all of you will be glad to know that more sports car models on our list are being prepared. Just what these are I must keep a secret at present, but I will let you have full details as soon as I can.




**The Cunningham and the Jaguar XK120 rounding a sharp bend during a Dinky Toys Sports Car Race.**

# Easy Model-Building

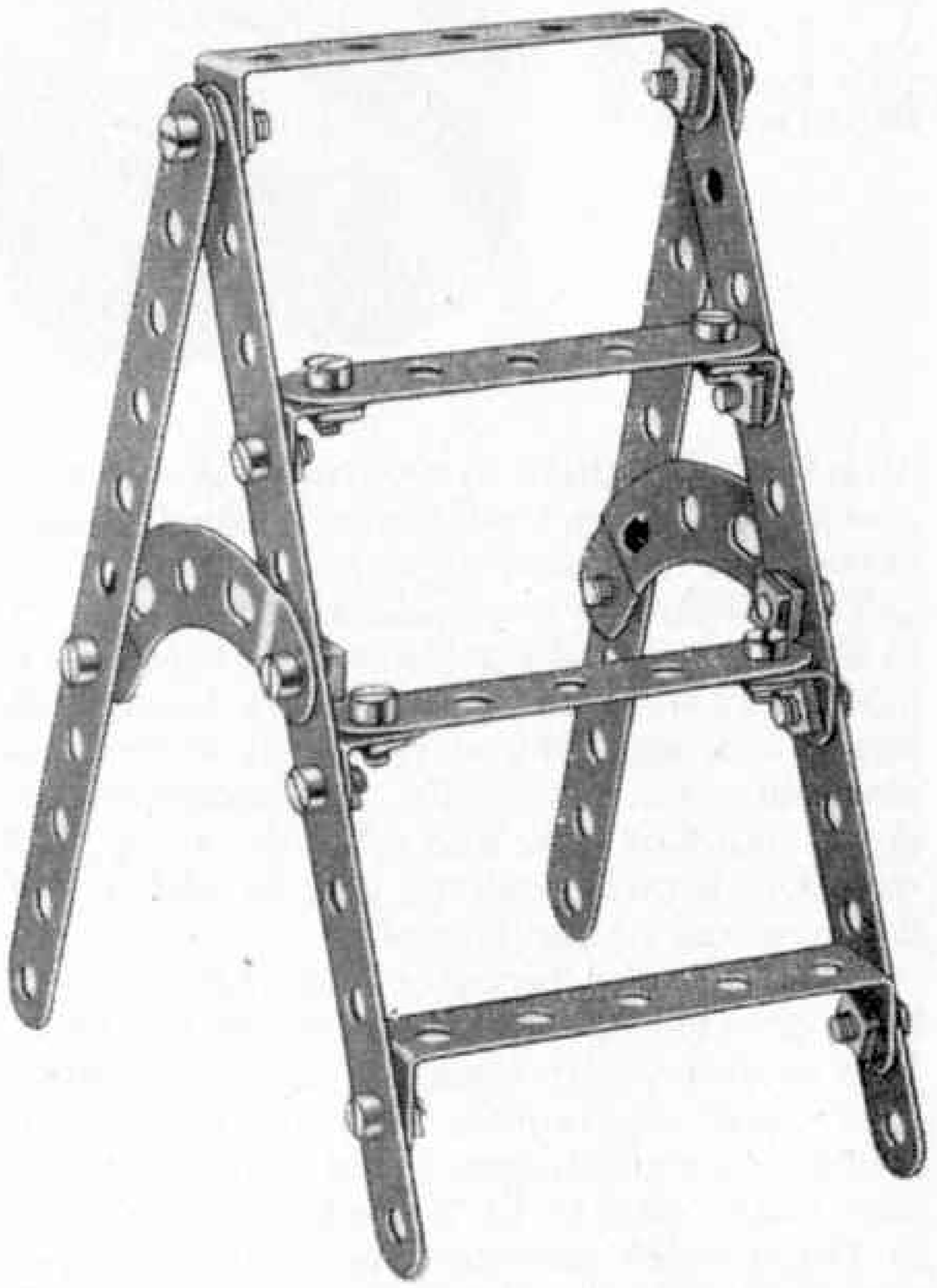
## "Spanner's" Special Section for Juniors

WHEN the Editor told me of his grand idea to start a new section of the Magazine for younger readers, I was delighted. I thought now I shall have the opportunity to do something I have long wanted to do, that is, to help the very youngest model-builders to get the utmost possible fun from their Meccano Outfits, and to try to rouse in them something of the great love for the hobby that I have myself. Meccano has given me untold happiness and pleasure over a period of many years, and if you are one of these thousands of youngsters and I can help you to share this happiness with me, then I shall consider I am doing a worthwhile job.

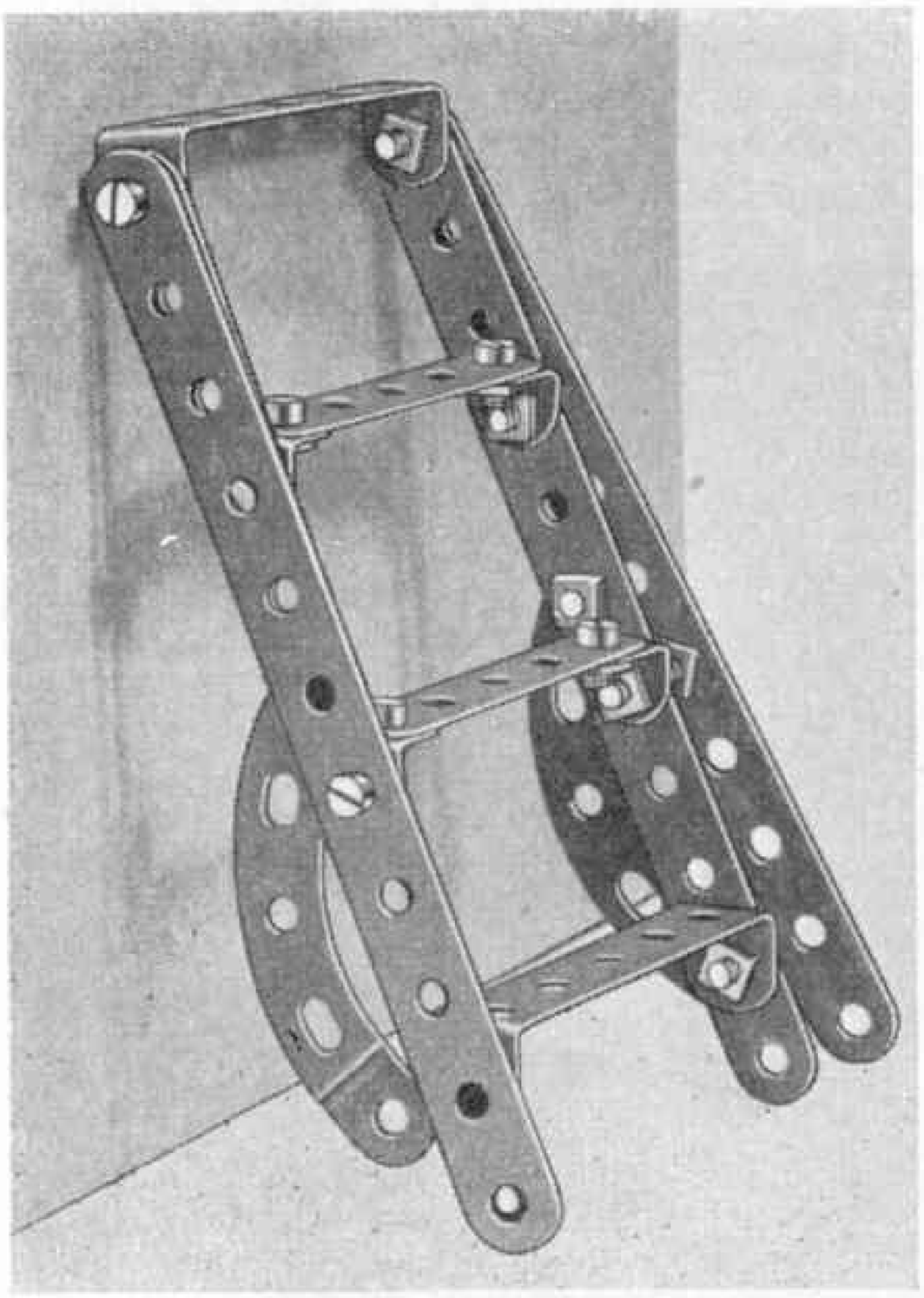
Now let me tell you something of what I have in store for you. You may perhaps be familiar with *Among the Model-Builders* and *Suggestions Section*, features that have appeared in the *M.M.* for very many years. In them hundreds of new Meccano models, mechanisms and gadgets have been described. But as I look back I feel that most of them have been too advanced to be of use to very young model-builders possessing only small Outfits. In this new section therefore I intend to include some very simple mechanisms specially designed for those with either very small Outfits, or who may be too young to understand and make use of complicated mechanisms.

In addition there will be descriptions and illustrations of new and attractive models that can be built from small Outfits, and later on I hope to arrange special junior model-builders' competitions.

To start off I have two simple new models for you. The first of these is a tiny folding stepladder, which you can make from the parts in Outfit No. 0. It is shown in pictures Nos. 1 and 2 on this page, and very probably you will have a real stepladder of this kind in your own home. As you will see, the model really is very simple and the exact list of the parts you will need to build it is: 4 of No. 2; 2 of No. 5; 4 of No. 12; 20 of No. 37a; 14 of No. 37b; 2 of No. 48a; 2 of No. 90a; 2 of No. 111c.



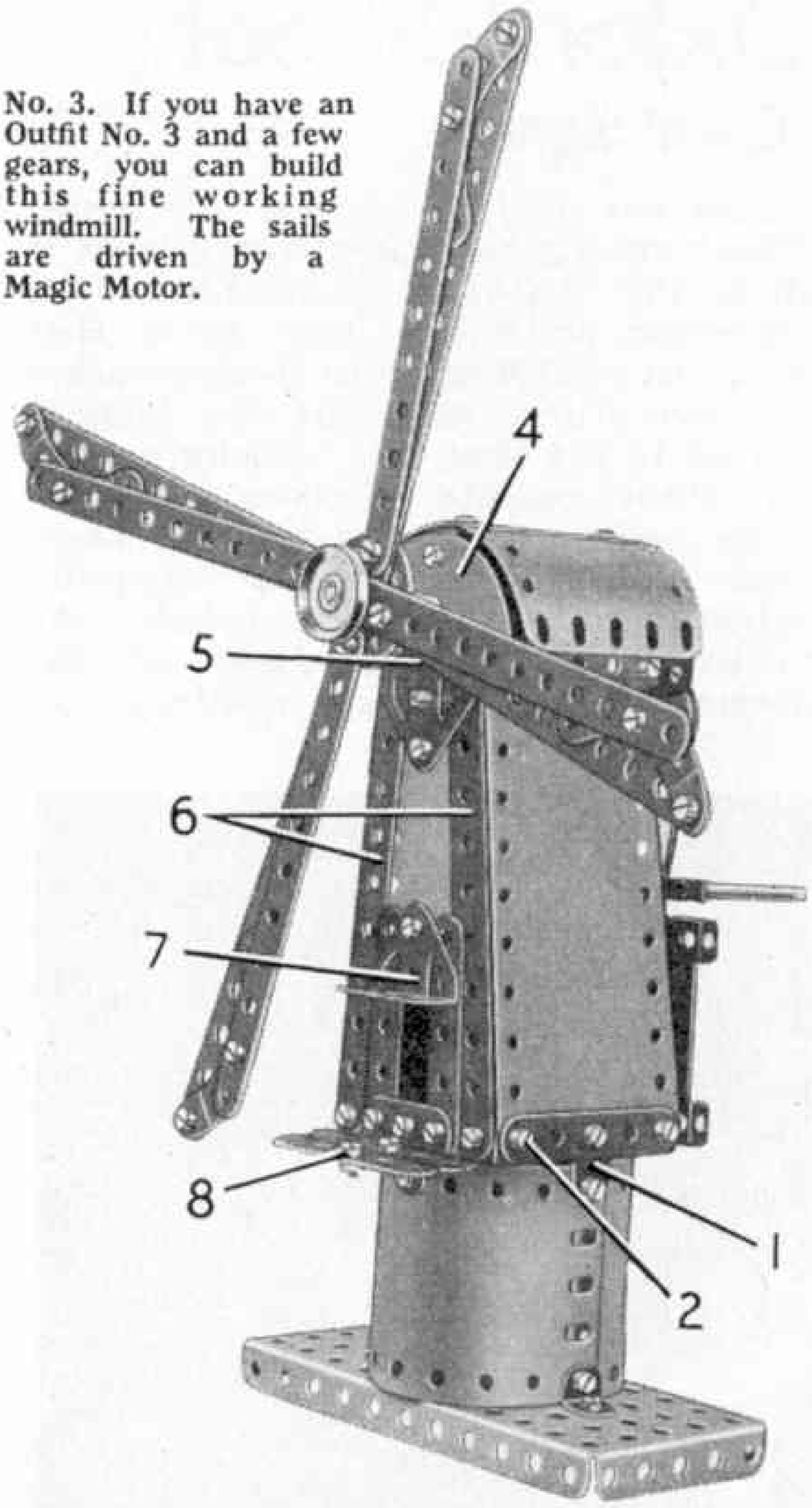
**No. 2. An attractive stepladder you can build from the parts in Outfit No. 0. It is shown in the folded position in picture No. 1.**



**No. 1. The stepladder in the folded position.**

There is no need for me to describe every little detail of this model, as the pictures show them quite clearly. But there are one or two important points I must mention so that you will not go astray. First, you should notice that the rear legs are attached to the top of the ladder in such a way that they can be folded for storage. The rear legs are mounted on the same Bolts used to hold the Double Angle Strip forming the top step. The step must be fixed, but the legs must be free to move, and to enable this to be done a form of lock-nutting is used. Lock-nutting is a useful dodge and is quite simple once you know how it is done. You should take a $\frac{3}{8}$" Bolt and pass it through the top hole of one of the rear legs. Now screw a nut on the Bolt, but do not tighten it against the Strip. The Bolt can then be pushed through the front leg and the Double Angle Strip, and finally a second nut must be screwed *tightly* in place to fix these parts together.

Another point to notice is that the two Curved Strips also are lock-nutted to the ladder, but this time a more simple arrangement is used. Take an ordinary bolt and pass it through the leg and the Curved Strip, and then screw a nut on the bolt. *Do not tighten* the




**No. 3. If you have an Outfit No. 3 and a few gears, you can build this fine working windmill. The sails are driven by a Magic Motor.**

nut however. Now screw a second nut tightly against the first. That is all there is to it.

I hope you will be able to build the model—perhaps you can make a better one—but if you have any trouble at all and there is something you cannot understand please write to me and I will do my best to help you.

My next model is the attractive little windmill shown in picture No. 3. This is a real working model for it has a *Magic* Motor built into it and this drives the sails in fine fashion. It is quite easy to build and even if you are only a beginner it should cause you no difficulty. You will want a No. 3 Outfit and in addition a ½" Pinion (Part No. 26), a 57-tooth Gear (Part No. 27a) and a *Magic* Clockwork Motor.

The base is made by bending two 4½" × 2½" Flexible Plates to semi-circular shape so that when they are bolted together they form a cylinder. The cylinder is then attached to a 5½" × 2½" Flanged Plate by two Angle Brackets, and a 2½" × ½" Double Angle Strip is fixed across its open end. The bolts used to attach this Double Angle Strip are used also to fix a Fishplate 1 on each side.

The sides of the mill body are 5½" × 2½" Flexible Plates, edged at top and bottom by 2½" Strips. The lower front corners of the Flexible Plates are joined by a 2½" × ½" Double Angle Strip held by bolts 2, and the rear corners are connected by a 2½" Strip 3 and two Angle Brackets. The top corners of the Flexible Plates are attached by Angle Brackets to Semi-Circular Plates 4 and Flat Trunnions 5. The body is bolted to the Fishplates 1 of the base and is connected to the cylinder by another Fishplate at the front.

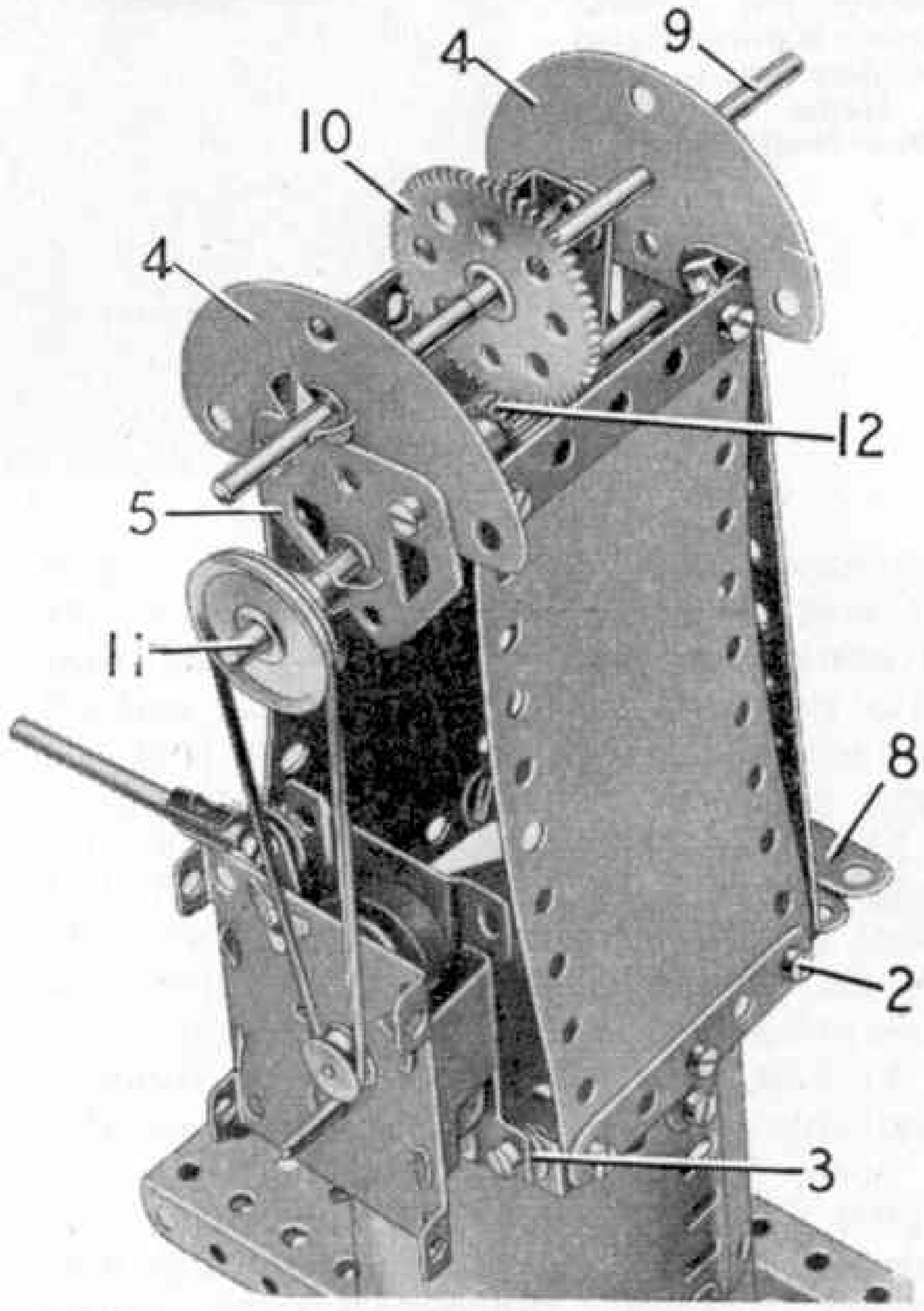
For the front of the mill bolt two 5½" Strips 6 between the Flat Trunnion 5 and the Double Angle Strip held by the bolts 2. A 2½" × 1½" Flexible Plate is bolted to the Flat Trunnion and is fitted at its lower end with a Trunnion 7. Two 2½" Strips are clamped between this Trunnion and Strips 6, and are bolted at their lower ends to the Double Angle Strip held by bolts 2. A platform 8 is made by fixing two 2½" Strips to a second Trunnion bolted to the front of the mill.

To make the sails fix two 12½" Strips across a Bush Wheel, using the same bolts to attach also four 5½" Strips. The end of each 5½" Strip is then connected to a 2½" Stepped Curved Strip bolted to the outer end of each arm of the sails. The Bush Wheel is fixed on a rod 9 made up from a 3½" Rod and a 1½" Rod joined by a Rod Connector. This rod is supported in the Semi-Circular Plates 4 and carries a 57-tooth Gear 10.

A *Magic* Clockwork Motor is bolted to the Strip 3 and drives a 1" Pulley on a 4" Rod 11. Rod 11 is mounted in Flat Trunnions 5 and is held in place by Spring Clips. Now fix a ½" Pinion 12 on Rod 11 so that it engages the Gear 10. A Rod and Strip Connector bolted to the Motor brake lever is fitted with a 2" Rod that forms the control lever.

The mill roof consists of two 1 11/16" radius Curved Plates. A Double Bracket is bolted through one of its lugs to each of the Semi-Circular Plates 4. A bolt is then passed through the hole in the centre part of each Double Bracket and is held in place by a nut. The Curved Plates are fixed on these bolts by further nuts.

The complete list of parts used in the Windmill is: 2 of No. 1; 6 of No. 2; 9 of No. 5; 3 of No. 10; 2 of No. 11; 8 of No. 12; 1 of No. 15b; 1 of No. 16; 1 of No. 17; 1 of No. 18a; 2 of No. 22; 1 of No. 24; 1 of No. 26; 1 of No. 27a; 3 of No. 35; 52 of No. 37a; 48 of No. 37b; 8 of No. 38; 2 of No. 48a; 1 of No. 52; 4 of No. 90a; 2 of No. 111c; 2 of No. 126; 2 of No. 126a; 1 of No. 188; 2 of No. 191; 2 of No. 192; 2 of No. 200; 1 of No. 212; 1 of No. 213; 2 of No. 214; 1 *Magic* Clockwork Motor.




**No. 4. This picture shows the head of the windmill tower, from which some Plates are removed so as to show the gears and the Motor that drive the sails.**

# Speeding Up In Oxford Street

## Traffic Controls its Own Signals

TRAFFIC signals have been used for so many years to control the flow of traffic at busy junctions that it might be thought little more could be done to improve them. But this is not so at all, as the new progressive system in Oxford Street, London, has shown. This has speeded up traffic during busy periods by as much as 20 per cent. and motorists and other drivers spend much less time waiting for the lights to change.

The existing traffic light system had signals at each crossing, and a master controller at Oxford Circus so arranged matters that these turned to green at successive intervals. The idea was that a car passing the first set correctly arrived at each of the others in turn at just the right moment to allow it to continue.

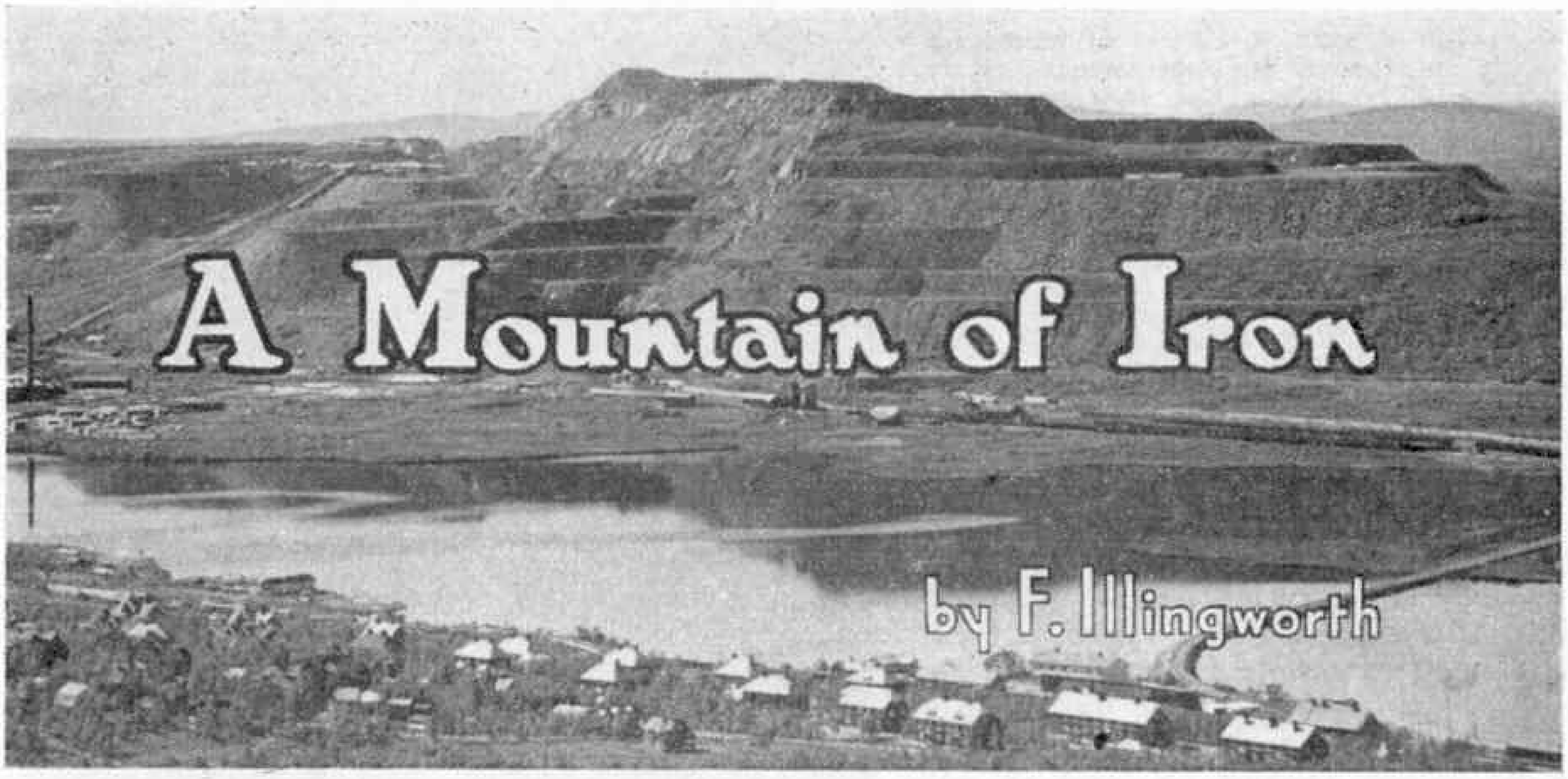
This splendid idea works for the new signals that have just been installed, but there is an important difference. The old signals were time controlled; the new ones are actuated by the traffic itself.

At first glance it might not be thought that this could make any difference. But it does, for the simple reason that now traffic is only held up when cars are actually waiting to enter from the side streets. Formerly the signals along Oxford Street often halted traffic along it when there were no cars or other vehicles waiting to come out of the controlled side street!

This new scheme makes use of what is called the Autoflex vehicle-actuated progressive system, a long name that means just what it says. In the approaches to Oxford Circus there are the familiar mats set in the road, and vehicles passing over them operate electrical contacts in the boxes on the pavement. These signal to an integrator, a wonderful mechanism that actually counts the vehicles themselves and passes on the information to the master controller at Oxford Circus. This weighs up the situation every five minutes and then automatically changes the timing cycle to suit the density of traffic.

The controller can even cut out some of the side road detectors to keep vehicles moving along Oxford Street when the number of these is large. At night on the other hand, when traffic is light, it just leaves the controllers at individual crossings to do their work independently, the lights then responding to the passage of vehicles over detector mats placed in the side streets. Formerly there were traffic lights at 19 crossings between Marble Arch and St. Giles' Circus. Now there are only 15, as some right turns have been banned and one-way working is now in force in some side streets.

**In this picture of Oxford Circus, London, some of the new traffic signals can be seen. They were installed by Siemens and General Electric Railway Signal Company Ltd., to speed up traffic along this busy thoroughfare.**




ENGINEERS in Kiruna, a Swedish town on the edge of a region of eternal ice 100 miles north of the Arctic Circle, are pressing ahead with what they call "one of the biggest individual jobs in the history of iron mining." Their final aim is an output far higher than has been attained from a single mine anywhere in the world—*up to 50 million tons of ore annually*—and the Swedes are showing an almost American-like hustle deep in their iron-heavy chunk of ore two miles long, about the same width, and nearly 3,000 feet deep.

The discovery of a deposit of 400 million tons of iron ore in Labrador shortly after the war was considered of such importance that Canada and the United States spent £50,000,000 on the construction of a railway across 360 miles of almost unexplored "barrens" to it. The deposit in the neighbourhood of this brightly painted, wooden-built town on the edge of a lake in Arctic Lapland totals more than twice that figure—900 million tons. What is more, the electrified railway from Sweden's Baltic Sea port of Lulea to the Norwegian iron ore port of Narvik passes within literally one mile of this great block of grey ore.

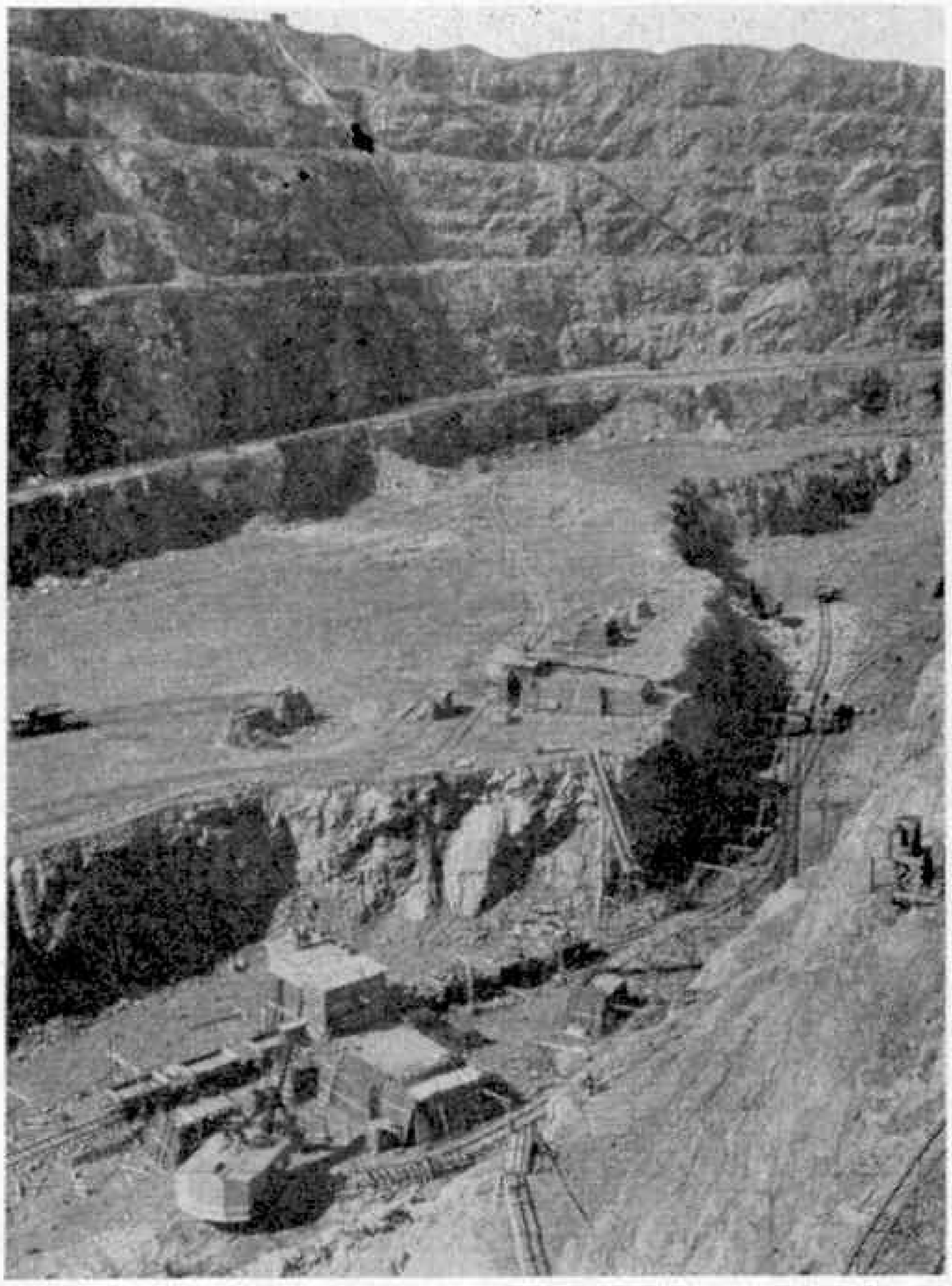
Engineers are working on this railway, increasing its present maximum ore-carrying capacity of 12 million tons annually by one third. For some time now the Norwegians have been increasing the capacity of Narvik, through which British industries have received four million tons of Swedish ore last year, and its loading wharves are now able to handle three times this tonnage annually. And Swedish railway engineers are not only to extend the iron ore port of Lulea, but also will build a new port a little to the south, at a place called Pitea.

Meanwhile, miners here in Kiruna are earning big money burrowing and blasting a veritable network of tunnels through the heart of the iron-heavy base of what local people call "our iron mountain." A good man will earn £30 a week, they told me in the control room in one section of the workings. "A really good drifter he can earn 2800 kr. a month," the foreman in charge of the control panel said. "In British money that ees about dvo 'ondred and twenty pounds. Ja!"

**There are 900 million tons of iron in the famous mines of Kiruna, in Swedish Lapland beyond the Arctic Circle, and the extraction of the ore deep in the heart of the mountain seen in the illustration at the head of the page continues winter and summer alike. The air in some parts of the workings of this Arctic mine has to be heated to make working conditions reasonable.**

When I was up there four years ago it was late winter. The mercury stood at 15 deg.F. below zero and a cold wind blew into our faces as Chief Engineer Christofferson pointed along the ragged floor of a deep quarry blasted from the Iron Mountain by a generation of miners. "The whole top of the mountain was good-quality iron ore," he said. "We have nearly exhausted this surface deposit now, and when there's no more left we'll have to start what we call 'total deep mining.'

He did not mention that even then engineers were driving tunnels through the base of the mountain upon which we



**The surface deposit at Kiruna is mined by blasting out the ore in huge terraces. It is now almost exhausted, and deep mining is in progress.**

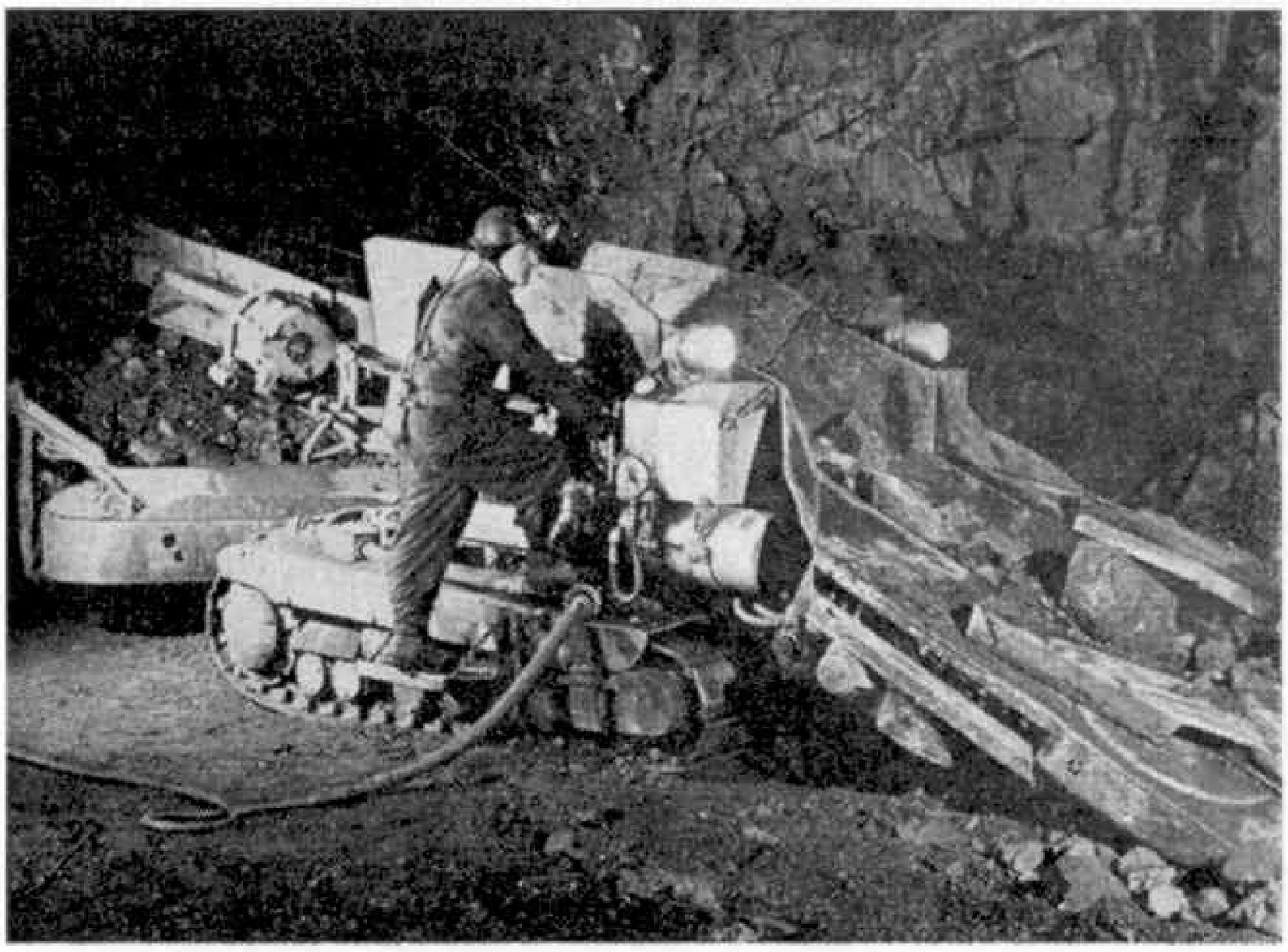
stood, in readiness for the day when the last ton of surface ore had been mined.

This time my guide was a tall young engineer named Lars de Jounge. For four hours we walked along newly hewn tunnels but in that time could see only a fraction of the new workings. The drip of water from icicles hanging from the roof of the tunnels had formed ice stalagmites that looked like upturned opaque beer bottles. The smell of dynamite hung in the air. Every now and again exploding charges brought showers of icicles down around us, and as we picked our way among the up-turned "beer bottles" and shattered icicles Engineer de Jounge said: "Deep mining means dearer ore—it costs money burrowing down like this. If we were to charge more for our iron ore you'd have to pay more for the things you make from it, and to keep the cost down we've developed new labour-saving mining machinery."

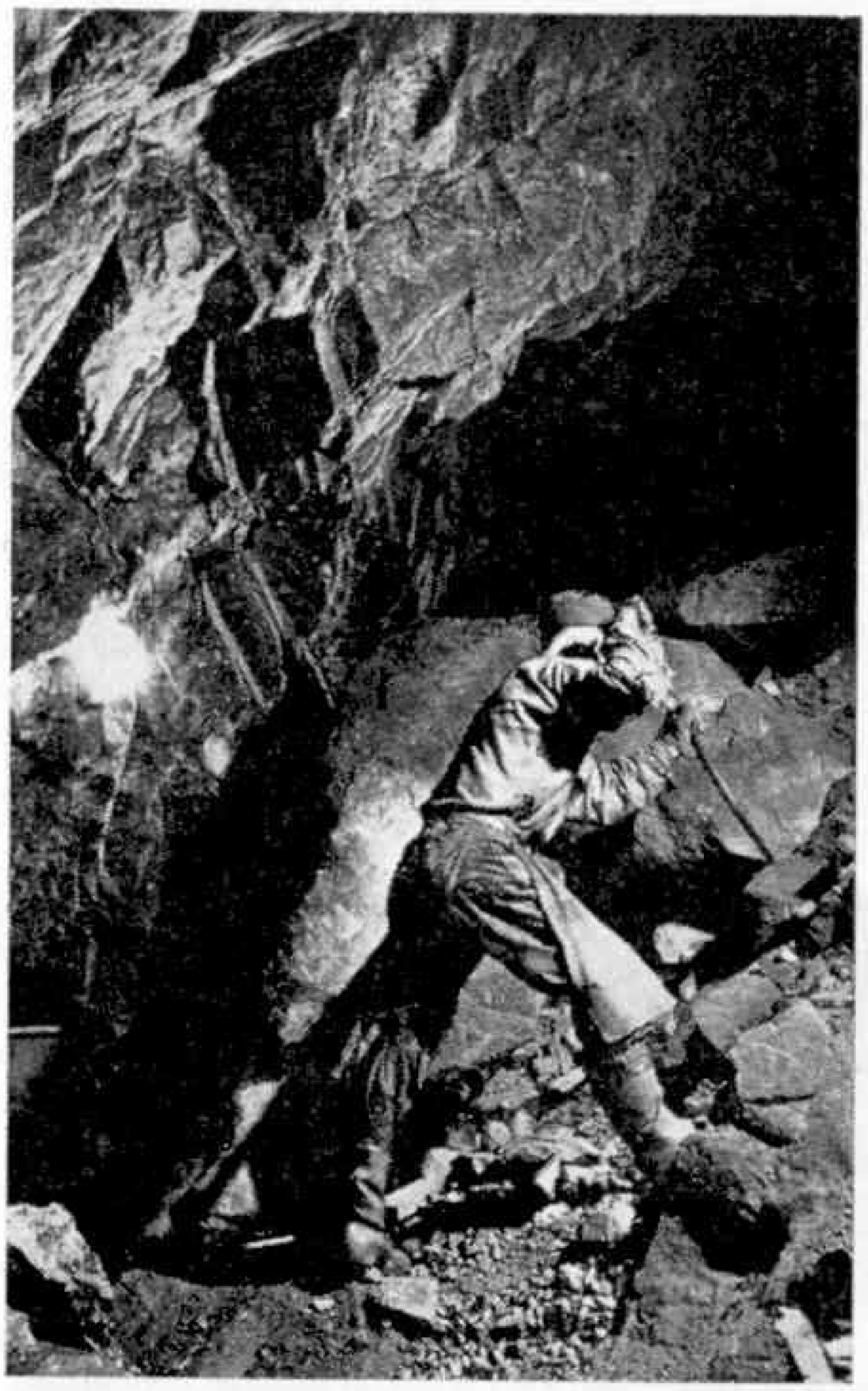
The Swedes have taken the modernization of their Arctic iron mines to the point where the air in some parts of the workings is heated—for the greater comfort of the miners!

One new machine Herr de Jounge pointed out had crab-like claws. "In the past," he said, "we had to bring one truck at a time to an ore-face for loading. But this new Joy Loader—she make all the difference. Ja!" The machine's claws were scooping dynamited ore on to a travelling belt, beneath which stood a long line of trucks.

Other new mining machinery includes high-powered drills, new designs in trucks and 80-ton hoists. The three new systems of workings, branching from three railway tunnels one above the other, one of them through ore averaging 50 per cent. pure iron and in some places up to 70 per cent. iron, are linked by a new idea in hoists that has a lifting capacity of two million tons annually. "And we're now installing another six hoists of a new design."



**The Kiruna mines are mechanised, and here is a Joy Loader at work.**



**Tough work deep in the heart of Kiruna's iron mountain.**

One of the main problems of mining up there is the effect of winter cold on machinery. The cold of the Arctic winter causes delicate moving parts to contract and jam, oil to freeze and metal to crystallise and shatter when faced with a strain, they told me. The temperature in the tunnels is fairly constant summer and winter—about minus 2 deg.F. But forty below is nothing unusual in mid-winter.

Additional machinery is necessary to maintain the output at the level of the summer months, and to keep the machinery in operation requires the maintenance of a machine-repair shop with some 200 hands.

The maintenance shops are being modernised and extended to meet the strain of constantly increasing output. No less are the ports and railways serving this remarkable new mining venture being improved with new equipment. The 20 ore-trains rumbling past my hotel were averaging 44 trucks a day, carrying 1,600 tons of ore. New sidings are being built along this Baltic-across-the-Arctic-to-Narvik railway to increase the daily average of ore trains to 25; and not only will they average 65 trucks each, but railway engineers also have designed a truck that will carry more ore than the present scoop-shaped ones.

I was told that the target for this year was 17,000,000 tons of ore mined, of which British industries will absorb about one third. The next target is half as much again mined by 1959—that is in four years' time. And after that? "The aim," says a Swede wearing an American hand-painted tie, "After that? Well, I reckon the top figure will be up to 50 million tons mined annually. Don't forget the Americans have worked out their famous Mesabi iron ore fields, and they want more ore plenty bad." And the tourists who visit Kiruna this summer will comment on the brilliant Midnight Sun, not on the drama of the Iron Mountain, for this is being acted by matter-of-fact, hard-headed engineers.

**Part of the town of Kiruna and the open-cast workings are lighted by arc lamps, which are needed at mid-day in the long Arctic winter.**

# Road and Track

## A Monte Carlo Sapphire Achievement

By Peter Lewis

SINCE his first "Monte" in 1939, when he drove a Hillman Minx, "Mike" Couper—a Vice-President of the British Racing Driver's Club (he drove a Bentley at Le Mans in 1931 and lapped Brooklands in a Talbot at 129 m.p.h. in 1938)—has competed eight times in the Rally. Last year his Armstrong Siddeley Sapphire was awarded the Grand Prix d'Honneur for the best equipped car for road safety.

I was fortunate in being able to see Mr Couper's entry for this year's Rally a few hours before he left for the Lisbon starting point. There is not sufficient space to describe all the safety equipment on the Sapphire, but I was particularly impressed by the electrically-operated wipers on the headlamps for keeping them clear of snow and mud, the twin foglamps on extending arms operated from inside the car, the boxes of sand in front of each rear wheel which can be emptied by remote control to assist wheel grip, and the reflectors on the centre of each wheel disc. If the car is at a T junction or sideways across a road they provide a most valuable safeguard. The boot of the Sapphire carries two spare wheels with snow tyres, fitted snow shovels, and two containers of compressed air—each one only just over a foot long, but capable of inflating four "flats".

The comfort of the crew is well looked after. The navigator has a map table and light, and an illuminated magnifying glass. Two stop clocks—with shaded lights—are mounted on the dash, and there is a special attachment for a cine-camera to take steady pictures while the car is on the move. There is also an extra loud horn with a separate button for the navigator. Altogether a most interesting and efficiently equipped motor car.

The day before he left England for Buenos Aires to join the Mercedes-Benz team, Stirling Moss met me in London and told me something of his plans for 1955. He will drive a Formula I Mercedes in the World Championship events, including the British Grand Prix at Aintree in July, and a sports Mercedes in the Mille Miglia (April), Le Mans 24 Hour Race (June), the Nurburgring 1,000 Kilometre Race (August) and the Pan-American Road Race in November. Although he speaks no German he gets on well with his team-mates and thinks the Mercedes organisation is most efficient. He is a great admirer of World Champion Juan Fangio, his team leader. "He never gives up, however tough the odds."

Stirling is anxious to race his own Maserati—now with disc brakes and fuel injection—in this country whenever the Mercedes commitments allow, and hopes to drive a British car in the Sebring (Florida) 12 Hour Race this month. He

**"Mike" Couper with his Monte Carlo Rally team leaving for Lisbon, his starting point in this year's event. Again his Sapphire won the Grand Prix for the best equipped entry for road safety.**

**The R.G.S. Atalanta leads a C Type Jaguar through the chicane at Goodwood.**

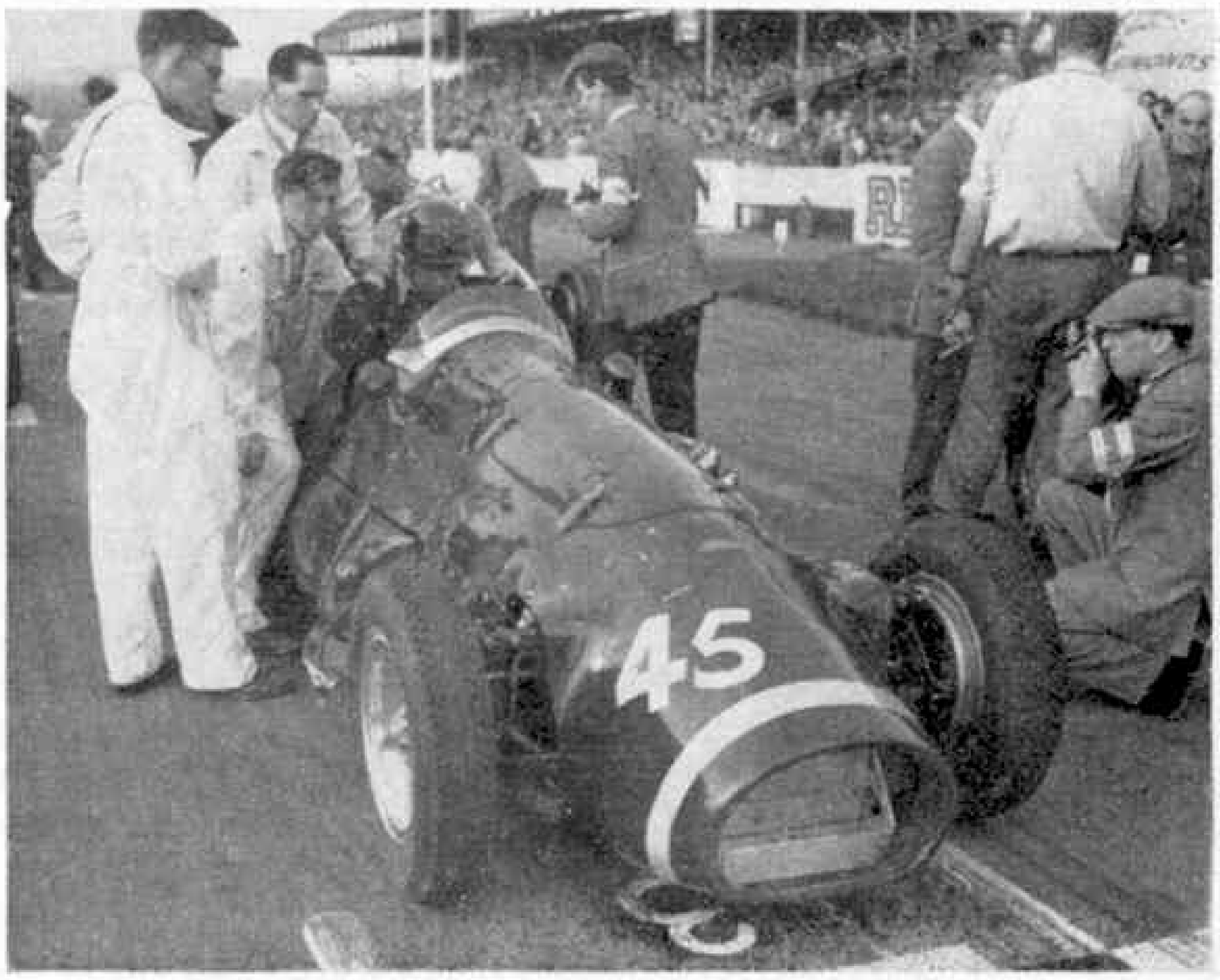
won the race last year in an Osca. However, he has decided to give up 500 c.c. racing and we shall not see him in the remarkably fast Beart-Cooper Norton. This was a wise decision, for the twenty-five year old driver has a gruelling season ahead of him.

The Mercedes contract is only for 1955 and Stirling was not slow to answer when I asked him if he still wanted to drive British. "Yes . . . . and I hope it won't be too long." This season will, we all hope, see the development of a successful British Grand Prix car, while at the same time one of our two finest drivers will be gaining invaluable experience of race tactics and strategy in the incomparable Mercedes organisation.

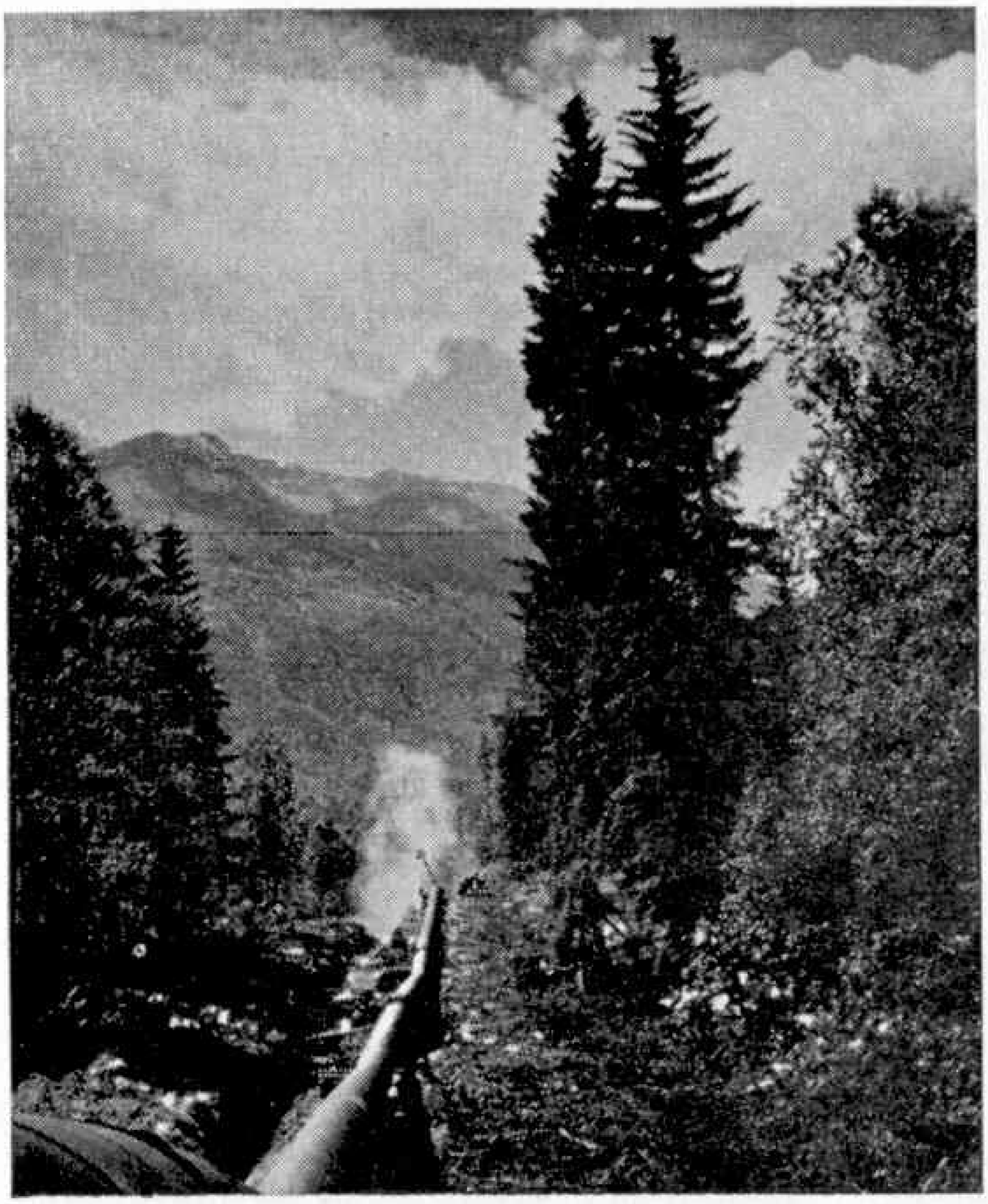
I drove over to Winkfield, near Windsor, and found R. G. Shattock busy on the R.G.S. Atalanta "works" car, now with a Jaguar engine. This car displayed tremendous acceleration and equally impressive roadholding during the 1954 season and in this country only the "works" Jaguars and Aston-Martins could accelerate from 0–100 m.p.h. as quickly as the Atalanta, which reached this speed in a little over 19 seconds. But the rather unwieldy body was a handicap at speeds over 110 m.p.h., and Dick Shattock decided at the end of the season to fit one of the streamlined fibreglass bodies that he manufactures. This move may well put the car in the 140 m.p.h. class. I hope we shall see at least one of the Atalantas at the Members' Meeting of the British Automobile Racing Club at Goodwood on Saturday, 26th March.

These B.A.R.C. Members' meetings on the attractive Sussex circuit—there are three this season—provide a very enjoyable way of getting to know something about sports car racing. You can see many of our leading sports car drivers in action and wander round the two and a half mile circuit at will, watching the technique of the drivers from various vantage points, such as the artificial "chicane" S bend just before the pits and the fast and slow corners. The circuit is not crowded, as it is for the National and International meetings, and there is no difficulty about getting into the paddock, where there is always plenty going on. Most B.A.R.C. members take friends to these meetings, where there is invariably some close and exciting racing.

On 11th April—Easter Monday—the first big international event of the British 1955 season takes place, also organised by the B.A.R.C. at Goodwood.




**A. P. R. Rolt adjusts his helmet before the start of the Glover Trophy Race at Goodwood last Easter. He is at the wheel of a Connaught.**



# Pipe-Line Over the Rockies

ONE of the toughest pipe-line laying tasks ever undertaken was the construction of the great pipe-line, 718 miles long, that carries crude oil from the Alberta fields to the refineries of Vancouver and the north-west Pacific Coast of the United States.

Its starting point is Edmonton, in Alberta, where gathering and feeder pipe-lines deliver crude oil for pumping through the trans-mountain pipe-line. This is stored in 12 great steel tanks. The terminal is at Burnaby, near Vancouver, where there are 10 similar tanks, and there the oil is delivered to refineries or to docks for shipment as required, through other pipe-lines. A 20 in. pipe-line is under construction from a point 50 miles or so east of Vancouver, and branches from this will carry the crude oil to various points in the State of Washington, south of the Canada–United States border. This part of the work will be completed this year.

From Edmonton the pipe-line climbs over the Rocky Mountains, which it crosses by the Yellowhead Pass, at a height of 3,720 ft. above sea level. This is the pass through which the main trans-continental line of the Canadian National Railway passes. Once over the pass, the pipe-line turns southward along the course of the North Thompson River, following approximately the line of the C.N.R., and it passes through some of the roughest country, and the most difficult of access, that pipe-line engineers have ever had to face. In consequence veteran pipe-line builders working on the project invented many names for the line. Some called it the *Inch-By-Inch*, others the *Toughest Inch*, and one appropriate description that caught their fancy was the *Roughest Inch*, which certainly suggests fully the difficulties of the task of laying it. During the work the engineers found themselves building the longest single side-hill cuts on record. Some of these were up to a mile in length, and they accounted altogether for 135 miles of the 718-mile length.

The ground was so rugged that some of the crews had to use as many as twenty bulldozers, which were needed for moving the dense timber as well as for clearing and levelling the ground generally. All vehicles used had four-wheel drive, and they included tractors, snowmobiles, snowcats and muskeg crawlers. One reason for needing the vehicles with these remarkable names was that the line can be reached by road over less than half its length. Another was that in some mountain sections there is an annual snowfall of from 30 to 50 ft. Much of the route is near the transcontinental railway, so great use was made of railway equipment.

The pipe used for this mountain line is 24 in. in diameter, and its thickness varies

**The illustration at the head of the page shows a section of the 718-mile Trans-Mountain Pipe-Line from Edmonton to the Pacific Coast under construction. The illustrations to this article are reproduced by courtesy of the Shell Petroleum Company.**

from a quarter of an inch to half an inch. The actual pipes are from 32 to 40 ft. long. A 40 ft. length weighs about a ton, and altogether about 150,000 tons of steel were needed. The pipes were made in the United States and carried by rail to sidings along the route, of which there were about 140 between Edmonton and Vancouver, the end points of the line. Large specially-built lorries then carried them to the site and strung them out alongside the trench in which they were to lie. The pipe-line had to be buried to prevent damage by snowslides and landslides, and also to avoid exposure to low temperatures, which on occasion may be 50 deg.F. below zero.

Where the line runs in rock the pipe is buried to a depth of 24 in. Where the pipe-line passes through farming areas it is 30 in. below ground. This latter depth allowed the soil to be cultivated immediately after the pipe-line had been covered, and crops have since been harvested on the fields over it.

The pipes were welded together to form a continuous line and each weld was tested by X-rays in order to make sure that it was as nearly perfect as possible. A machine travelling under its own power and equipped with steel brushes then cleaned off rust and scale from the pipe, which was given a protective priming coat. Another machine applied a coat of enamel and then wrapped the pipe with glass fibre matting and asbestos felt. Finally the carefully wrapped pipe was lifted by large trucks with side booms, and gently lowered into the trench.

**Digging a length of the 718-mile oil pipe-line in rough country on a hill west of Geike, in Jasper National Park.**

The pipe-line crosses more than 70 streams and rivers, in which it is buried from 8 to 15 ft. beneath the bed of the stream, and about 80 highway and railway crossings. Signs reading "DANGER—DEER CROSSING" have long been familiar in Jasper National Park, through which the pipe-line passes. Now tourists and others who travel through the Park read other signs as well, marking the position of the "TRANS-MOUNTAIN PIPE-LINE CROSSING."

For pumping the oil through the pipe-line, there are four stations, each with three units consisting of a centrifugal pump and gearing, with the oil engine that drives it. The first of these stations is near Edmonton, and the others are near Edson, in Alberta, and at Black Pool and Kamloops, in British Columbia. Pumping is clearly necessary, for at its highest points the pipe-line is nearly twice the height of its starting point at Edmonton, which is a little over 2,000 ft. above sea level.

High pressures are developed in the pipe-line on the descents, particularly from the Rockies and the Cascade Range in British Columbia. The pipes were designed to withstand this pressure, and before the line was used for pumping oil to the coast it was tested under pressure with water. This was done in eighteen sections, each of which was subject to a pressure more than twice that to be used during pumping operations. The highest pressure actually used was as high as 1,425 lb. per sq. in.

As a further safety measure pressure limiting stations were placed at two points. One was at Vavenby, west of the Yellowhead Pass and 2,100 ft. lower. The other was at

(Continued on page 164)

# Among the Model-Builders

By "Spanner"

ON this page is a picture of a model of a large 250-ton press required for consolidating metallic powder. Its original actually was designed after experiments with Meccano parts, which provided valuable guidance in the general layout. The model was built by Mr. U. Ricchetti, Naples. Some idea of its size can be formed from the fact that the two flywheels on the ram shaft are built up from Flanged Rings, which are $9\frac{7}{8}$" in diameter.

Mr. Ricchetti is a technical expert in powder metallurgy, and he tells me that this press is only one of many instances when he has found Meccano useful in his professional work.

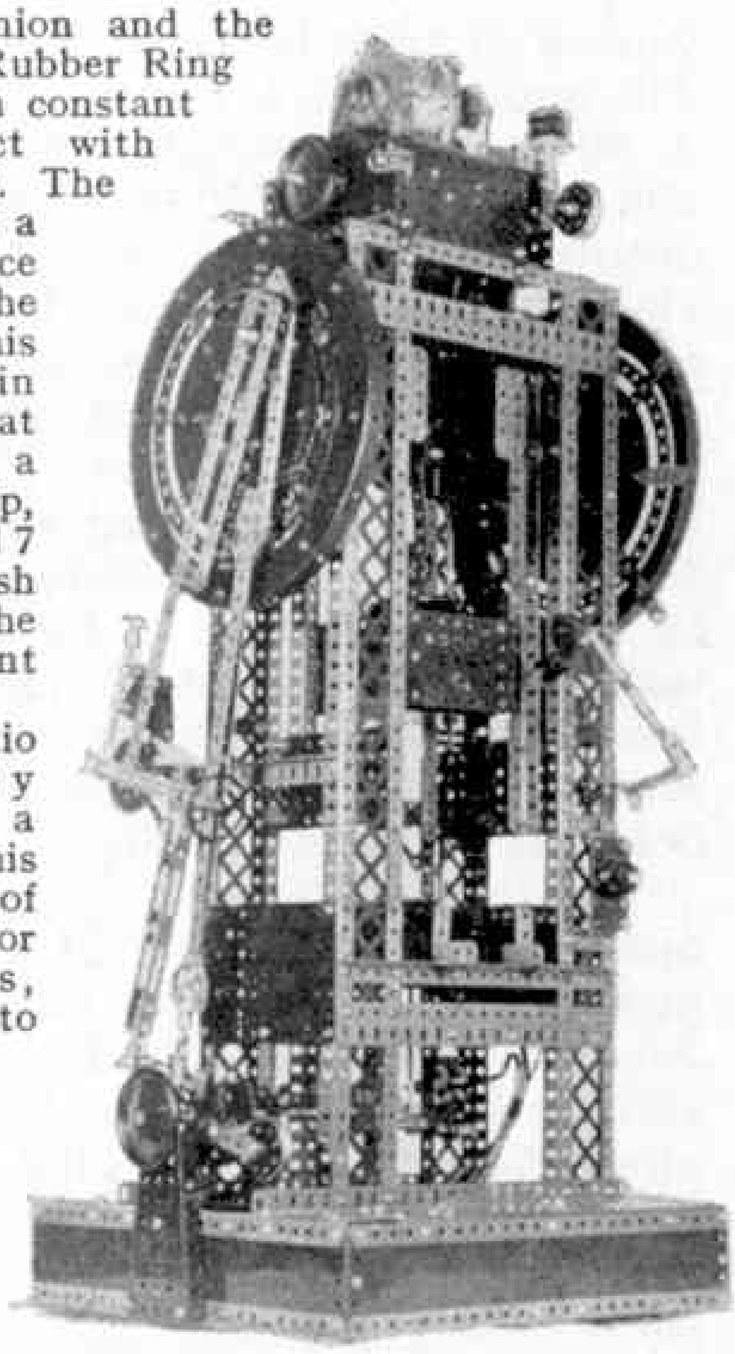


**Fig. 1. The model power press designed for pressing metallic powder which is referred to on this page. It was designed and built by Mr. U. Ricchetti, Naples.**

## FRICTION DISC VARIABLE SPEED GEAR

The simple arrangement shown in Figs. 2 and 3 is designed so that the speed ratio between the driving and the driven shafts of the mechanism can be altered at will simply by turning a handwheel. The framework of the mechanism is made by bolting a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flat Plate to each flange of a $3\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate. The Flat Plates are connected as shown by two $3\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips.

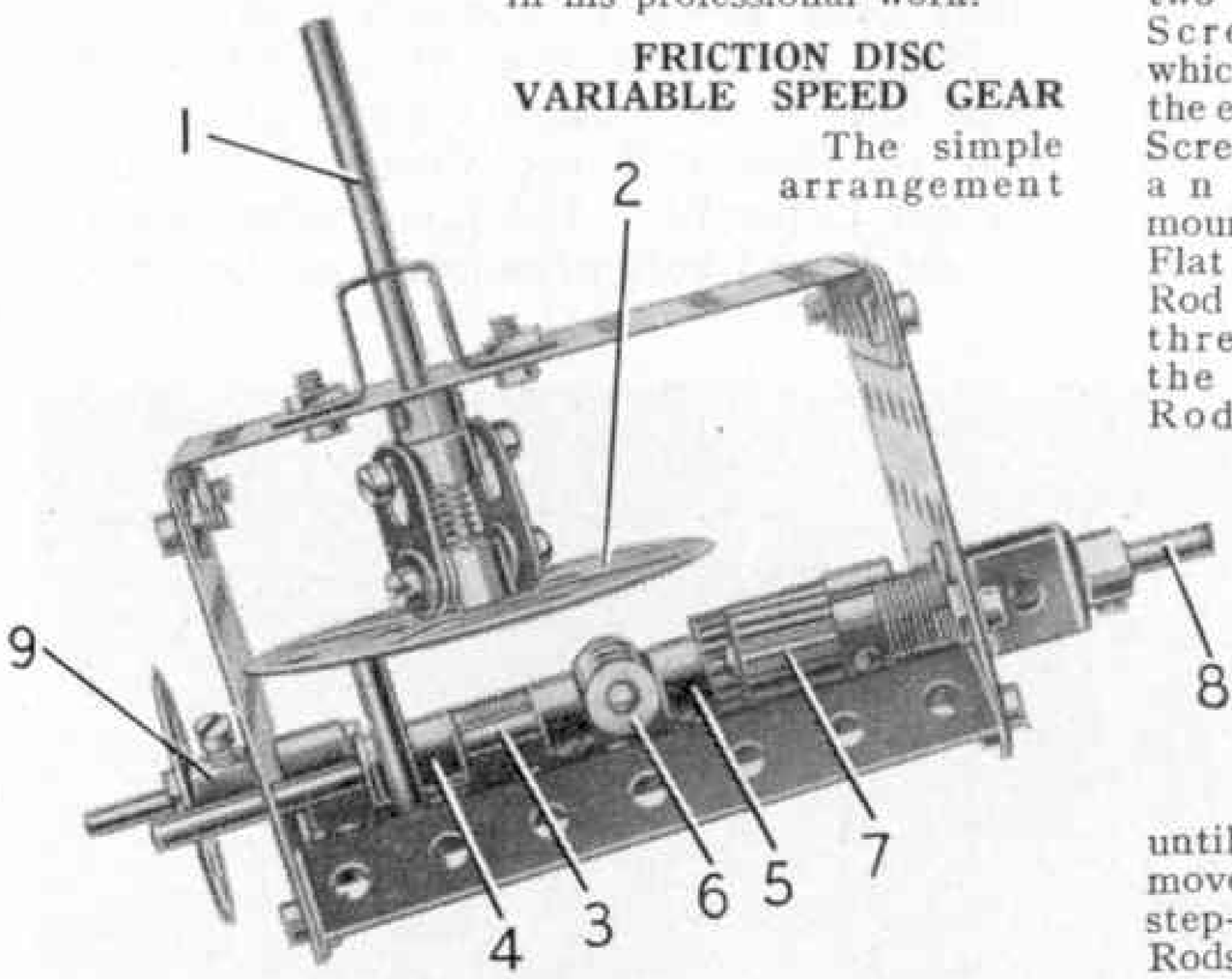



**Fig. 2. A friction disc variable speed gear.**

The driving shaft 1 is mounted in the Flanged Plate and in a Double Bent Strip, and it carries a Face Plate 2 to which two Fishplates are attached. The Fishplates are each fixed by a bolt fitted with three Washers, which is passed through the round hole of the Fishplate and is screwed tightly into the boss of the Face Plate. The Face Plate is not fixed on Rod 1, but is made to turn with the Rod by bolts passed through the slotted holes of the Fishplates and screwed tightly into a Collar on the Rod. A Compression Spring is placed between this Collar and the Face Plate, and a second Collar is used to space the assembly from the Flanged Plate.

The Rod 3 is free to slide endways in its bearings. This Rod carries a 1" Pulley 4 fitted with a Rubber Ring, a $\frac{1}{2}$" diameter $\frac{3}{4}$" face Pinion 5, a Threaded Coupling 6 and a Collar. The Threaded Coupling is mounted loosely between the Pinion and the Collar, and the Rubber Ring on Pulley 4 is in constant frictional contact with the Face Plate 2. The Pinion 5 engages a $\frac{1}{2}$" diameter $\frac{1}{2}$" face Pinion 7 on the driven Rod 8. This Rod is supported in one of the Flat Plates and in a Double Bent Strip, and Pinions 5 and 7 remain in mesh irrespective of the sliding movement of Rod 3.

The speed ratio is altered by turning a handwheel 9. This is fixed on one of two Adaptors for Screwed Rods, which are fitted to the ends of a 3" Screwed Rod and are mounted in the Flat Plates. A Rod Socket is threaded on the Screwed Rod and its shank is screwed into the Threaded Coupling 6.

When the Pulley 4 is moved towards the centre of the Face Plate a speed reduction ratio is obtained between Rods 1 and 8. As the Pulley is moved outwards this ratio is gradually varied until a 1 : 1 ratio is provided. Further outward movement of the Pulley results in a gradually increasing step-up ratio between the driving and the driven Rods.

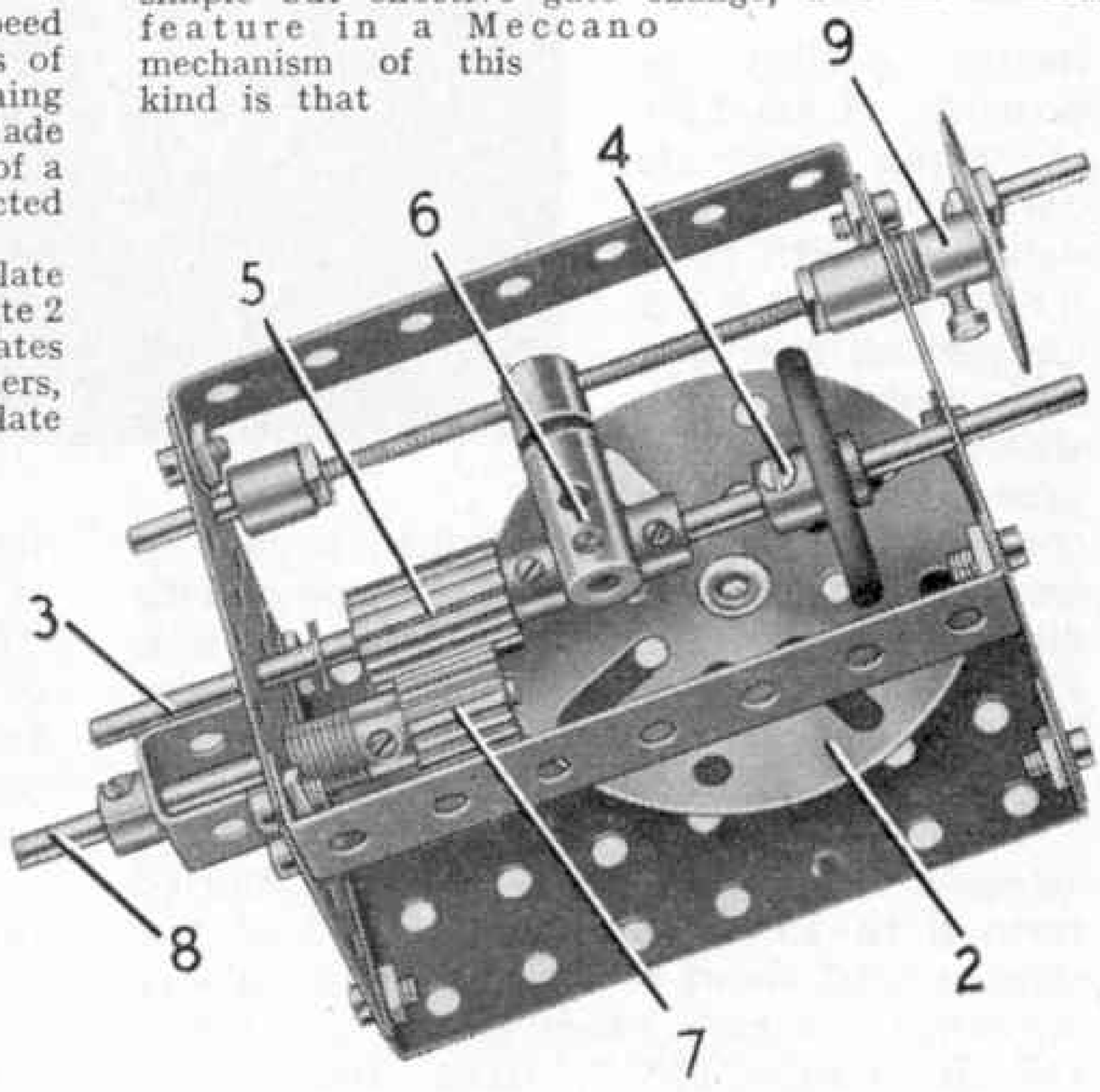



**Fig. 3. Another view of the variable speed gear.**

## 4-SPEED AND REVERSE GEAR-BOX

The gear-box shown in Figs. 4 and 5 is fitted with a simple but effective gate change, and an unusual feature in a Meccano mechanism of this kind is that

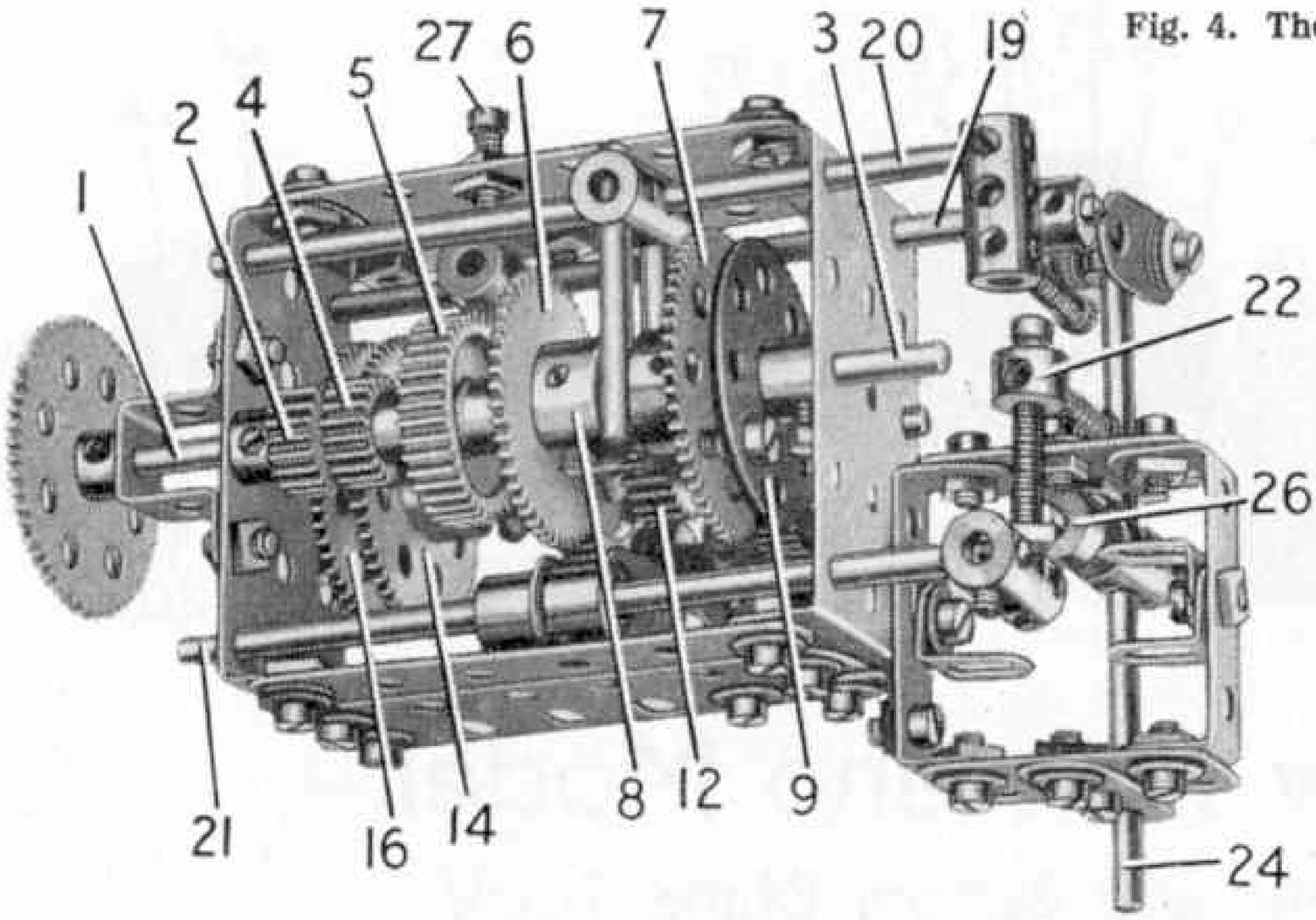



**Fig. 4. The 4-speed and reverse gear-box seen from the underside.**

the gears are arranged to slide on the shafts. Each side of the gear-box housing consists of a 3" Flat Girder and a 3" Strip, and the ends are $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flanged Plates.

The input shaft 1 is mounted in one of the Flanged Plates and in a Double Bent Strip bolted to it. The inner end of the shaft carries a $\frac{1}{2}"$ Pinion 2, but the Rod occupies only half the bore of this Pinion. The other half is used to locate the inner end of the output shaft 3. The output shaft is fitted with a $\frac{1}{2}"$ Pinion 4 and a 1" Gear 5, both of which are fixed in position, and a 50-tooth Gear 6 and a 57-tooth Gear 7 held in a Socket Coupling 8. The Socket Coupling and its Gears are free to slide on the shaft, but are made to turn with it by a $\frac{3}{8}"$ Bolt fixed by a nut in a Bush Wheel 9. This Bolt engages a hole in the Gear 7.

The layshaft carries a $\frac{1}{2}"$ Pinion 11 and a $\frac{3}{4}"$ Pinion 12 fixed in position, a 1" Gear 13 and a 57-tooth Gear 14 held in a Socket Coupling 15 that is free to slide, and a 57-tooth Gear 16 fixed on the shaft. A $\frac{3}{8}"$ Bolt held in Gear 16 by a nut engages a hole in Gear 14, so that the Socket Coupling assembly turns with the shaft.

The $\frac{3}{4}"$ reverse Pinion 17 is fixed on a $1\frac{1}{2}"$ Rod that slides in a Threaded Coupling. The latter is fixed tightly on a bolt passed through a slotted hole of one of the Flat Girders, and is adjusted so that Pinion 17 can be meshed with both the Pinion 11 and the Gear 7. The $1\frac{1}{2}"$ Rod carries a Collar 18.

The gear ratios are obtained as follows. Top gear is provided when the Socket Coupling 15 is moved to the left (Fig. 5), so that the Gear 14 engages the Pinion 4. When the Socket Coupling 15 is moved to the right (Fig. 5) Gear 13 engages the Gear 5, to provide third gear with a ratio of 3 : 1. The first and second gear ratios are obtained by sliding Socket Coupling 8. When this is moved to the left (Fig. 4) the Gear 7 engages the Pinion 11 and provides first gear with a ratio of 9 : 1. By sliding Socket Coupling 8 to the right (Fig. 4), the Gear 6 is meshed with Pinion 12 to engage second gear with a ratio of 6 : 1.

Reverse gear is engaged by sliding Pinion 17 to the right (Fig. 5) when the other gears are in neutral. The Pinion then engages both the Pinion 11 and the Gear 7 and provides a reverse drive with a ratio of 9 : 1.

The sliding movement of the Socket Couplings is controlled by selector Rods 19 and 20, each of which carries a Coupling fitted with two $1\frac{1}{2}"$ Rods that engage the groove in one of the Socket Couplings. Rod 19 carries a Collar fitted with a 7/32" bolt, and on Rod 20 a Coupling is fixed. A $1\frac{1}{8}"$ Bolt is screwed into this Coupling as shown and is held in place by a nut. The movement of Rods 19 and 20 is restrained by $\frac{3}{8}"$ Bolts 27. These are fixed in the housing by two nuts each and bear lightly against the Rods.

The reverse selector Rod 21 carries two Cranks, arranged one on either side of the Collar 18. A Coupling fixed vertically on this Rod has a $1\frac{1}{8}"$ Bolt held in it by a nut, and a Collar 22 is fixed on the Bolt. A $\frac{3}{4}"$ Bolt is held in this Collar by a nut.

The gear lever gate assembly is made by bolting two $1\frac{1}{2}"$ Flat Girders to the lugs of two $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips. One of the latter is bolted to the end of the gear-box housing and is connected to the housing by an Angle Bracket (Fig. 5). A made-up double bracket, consisting of two Angle Brackets, is bolted to each Double Angle Strip.

The gear lever is a Rod held in a Coupling 23 fixed on a Rod 24. Rod 24 is free to slide endways in $1\frac{1}{2}"$ Strips bolted to the $1\frac{1}{2}"$ Flat Girders, and it carries a "spider" 25 from a Swivel Bearing. Two Fishplates are fixed on bolts screwed into the spider, and are bent together slightly so that they fit closely over the heads of the Bolts on the selector shafts. A 1" Rod fixed in the lower section of Coupling 23 carries a Collar 26. This Collar engages between the forks of the gate as the lever is moved.

The Bolts on the ends of the selector shafts should be arranged so that when all the gears are in neutral the three Bolts are exactly in line. The Fishplates attached to the spider 25 will then slide freely over the Bolts when the gear lever is moved sideways. To engage a gear the lever is slid sideways until the Fishplates engage the Bolt on the appropriate selector shaft. The gear lever is then moved forward or backward to bring one of the gear trains into mesh.

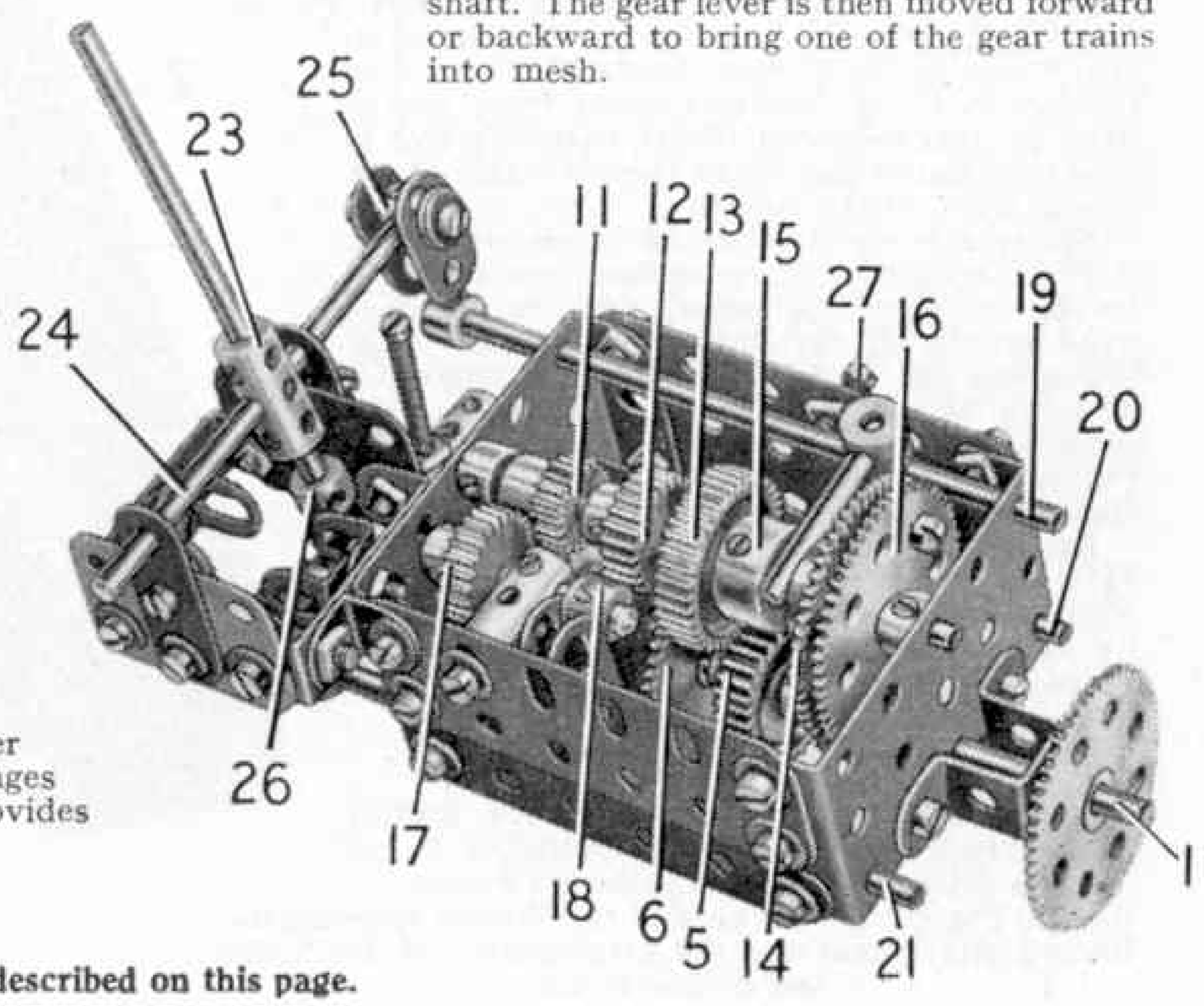
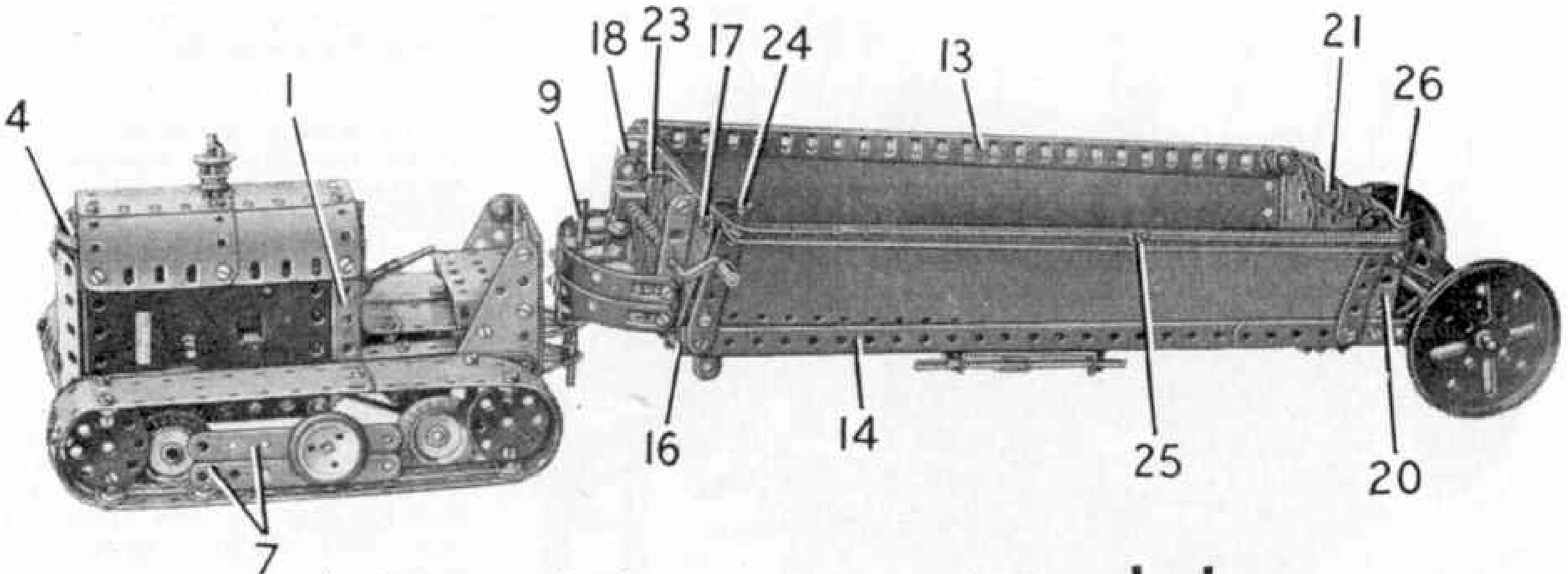



**Fig. 5. The 4-speed and reverse gear-box described on this page.**




# New Meccano Model

## Tractor and Bottom Dump Truck

AN interesting and unusual new model suitable for owners of an Outfit No. 6 or one larger, is the Tractor and Bottom Dump Truck shown in the illustrations on this and the opposite page.

Building of the model should commence with the chassis of the Tractor unit.

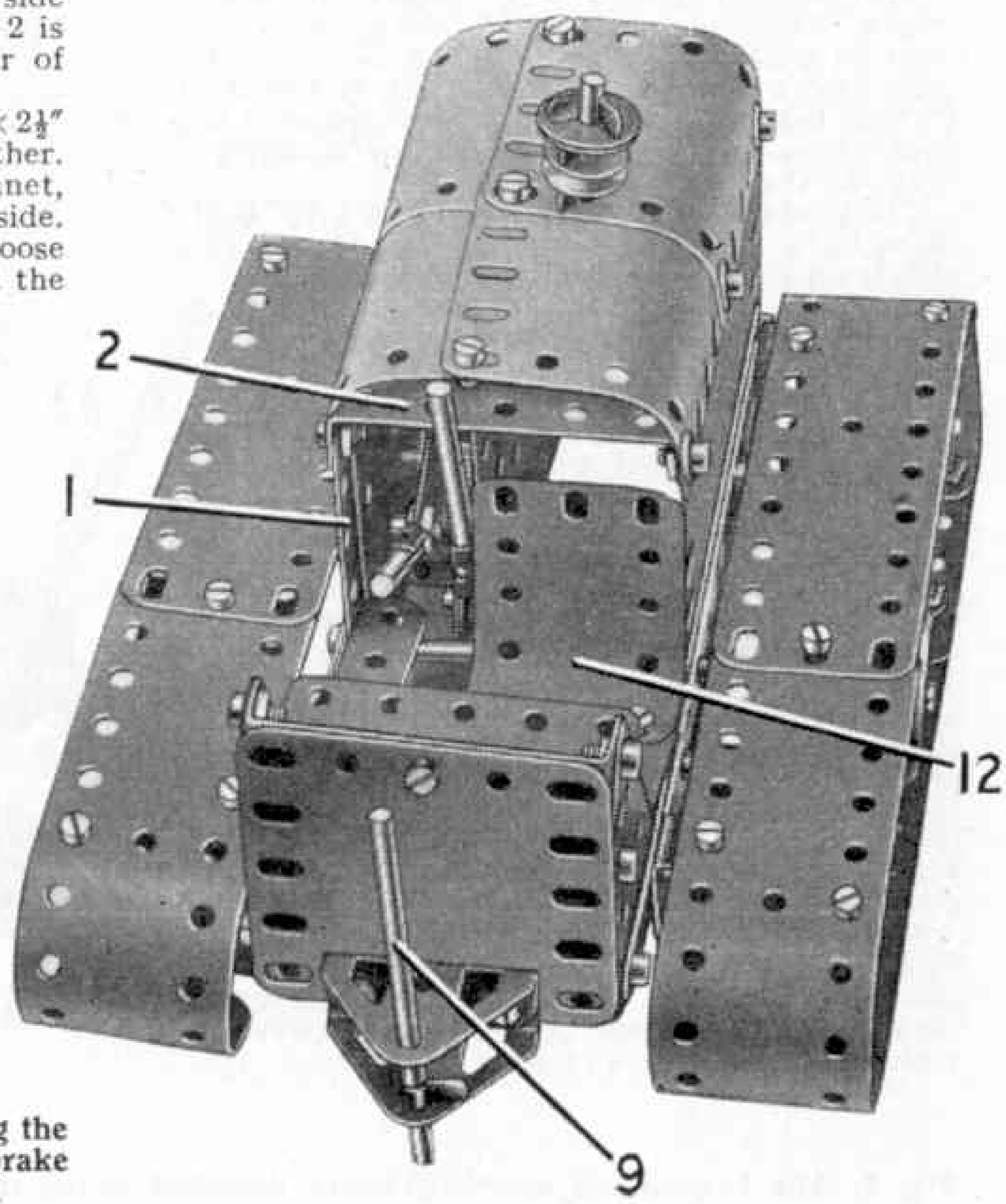
Each side member of this consists of two 5½" Strips overlapped six holes, and these are connected at each end by a 2½" × ½" Double Angle Strip. A No. 1 Clockwork Motor is bolted to one side of the chassis so that the side-plate of the Motor forms one side of the bonnet. The Motor is arranged so that it projects by one clear row of holes below the chassis members. This side of the bonnet is completed by a 2½" Strip 1, and the opposite side is formed by a 4½" × 2½" Flexible Plate. A 2½" × ½" Double Angle Strip is fixed between the top front corner of the Motor and the other side of the bonnet, and a similar Double Angle Strip 2 is bolted between the Strip 1 and the rear corner of the Flexible Plate.

The top of the bonnet consists of four 2½" × 2½" Flexible Plates curved as shown and bolted together. These Plates are then fixed to the sides of the bonnet, and a Bush Wheel 3 is bolted to them on the underside. A 2" Rod fixed in the Bush Wheel carries a ½" loose Pulley, two ¾" Washers and two Spring Clips. At the front a 2½" Stepped Curved Strip 4 is attached to the Plates by an Obtuse Angle Bracket. The radiator is a 1 11/16" radius Curved Plate and is fixed by nuts on two ⅜" Bolts, each of which is held by a nut in one of the Double Angle Strips at the front of the model.

The wheels are fixed on 3½" Rods supported in Flat Trunnions. Three of these are bolted to the 5½" Strips of the chassis, and the fourth is fixed to one of the Motor side-plates. A ½" Pinion on the Motor driving shaft engages a 57-tooth Gear on a 2" Rod 5. This Rod is held in the side-plates by a Collar, and it carries a ½" Pulley 6. The Pulley is connected by a Driving Band to a 1" Pulley on the rear axle.

Each of the dummy tracks consists of two 5½" × 1½" Flexible Plates and a 2½" × 1½" Flexible Plate, and two made-up strips formed by 5½" and 2½" Strips. The 2½" × 1½" Flexible Plate overlaps one of the 5½" × 1½" Flexible Plates by two holes, and each 2½" Strip overlaps a 5½" Strip by two holes. Each track is shaped as shown, and to each end a Wheel Disc is attached by Angle Brackets. Eight-hole Wheel Discs are used on one side and six-hole Discs on the other side. Two 3½" Strips 7 on each side are bolted to one arm of a 1" × 1" Angle Bracket, one of the Strips being held by a ½" Bolt that supports also a 1" loose Pulley fitted with a Rubber Ring. The Angle Bracket is then fastened to the lower section of the track, and a made-up strip 8 is bolted between these Angle Brackets on each side. This strip consists of two 2½" Strips overlapped two holes.

The driver's seat is made by bolting a 2½" × 1½" Triangular Flexible Plate to the rear end of each chassis side-member. A 2½" × 1½" Flanged Plate is




**(Above) Fig. 1. This fine Tractor and Bottom Dump Truck can be built with Outfit No. 6, and is driven by a No. 1 Clockwork Motor.**

**(Right) Fig. 2. A rear view of the Tractor showing the towing attachment and the arrangement of the brake and reverse levers.**

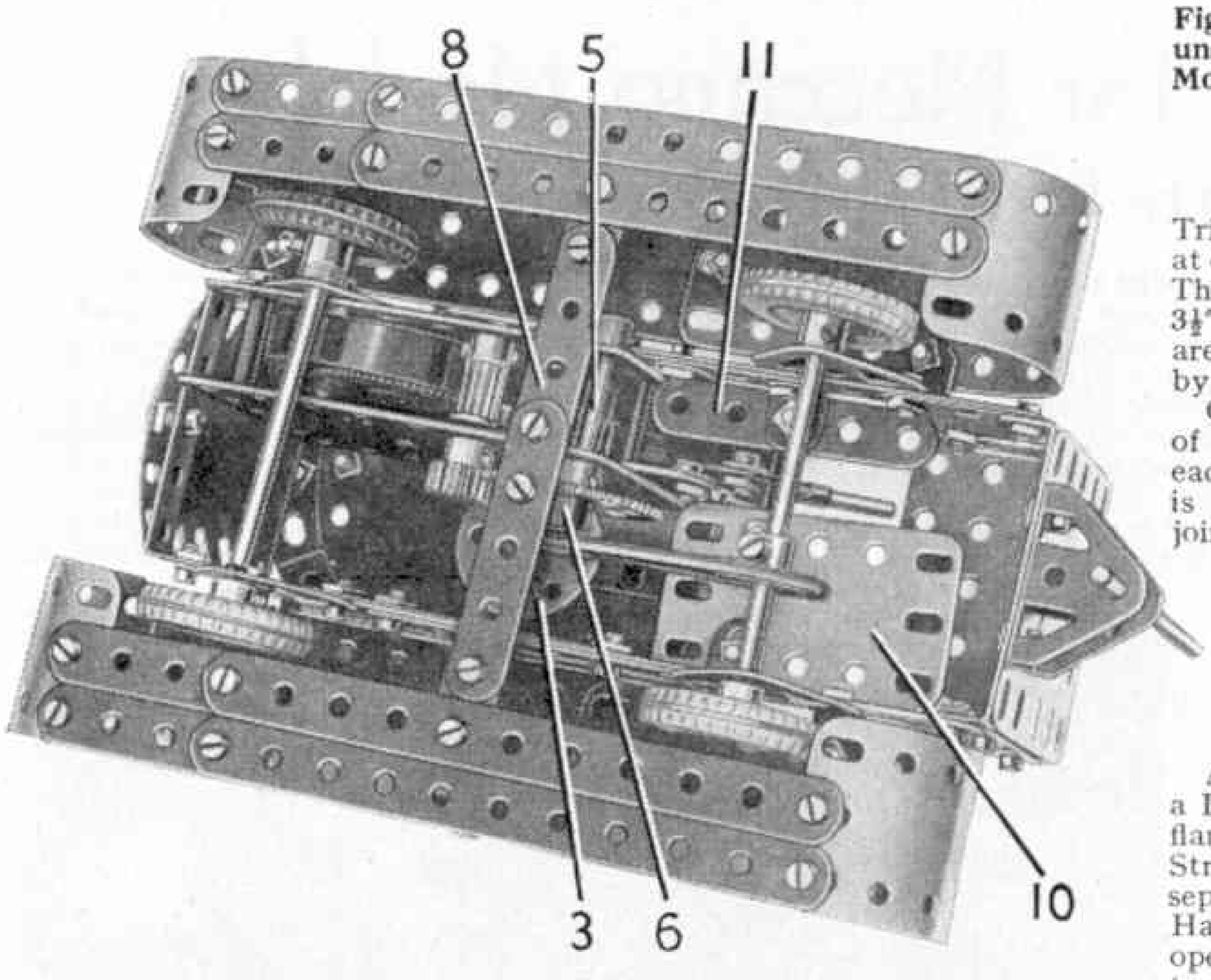



**Fig. 3. The Tractor seen from underneath. The No. 1 Clockwork Motor and the driving mechanism are shown clearly.**

fixed as shown between the Triangular Flexible Plates, and the back of the seat is a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate. The towing attachment is formed by two Trunnions, in which a $3\frac{1}{2}''$ Rod 9 is held by Spring Clips.

The brake and reversing levers of the Motor are extended by Rods held in Rod and Strip Connectors. The floor consists of a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 10 and a $2\frac{1}{2}''$ Strip 11, which are attached to the chassis by Angle Brackets. A $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 12 is curved as shown and is bolted to the Plate 10.

Each side of the dumper truck consists of a $12\frac{1}{2}'' \times 2\frac{1}{2}''$ Strip Plate fitted along its upper edge with a $12\frac{1}{2}''$ Angle Girder 13, at the front with a 3" Strip and at the rear with a $2\frac{1}{2}''$ Strip. A $12\frac{1}{2}''$ Angle Girder 14, extended by a $5\frac{1}{2}''$ Strip 15, is bolted to the lower edge of the side. The sides are connected at the front by a $3\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 16, and by a $5\frac{1}{2}''$ Strip 17 attached to the sides by Double Brackets. The front is filled in by a $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 18 with a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plate arranged on each side of it. Four Formed Slotted Strips are bolted to the Flanged Plate and are connected at the centre by a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 19, which pivots on the Rod 9 of the tractor towing device.

A $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 20 is bolted between the Strips 15, and two $2\frac{1}{2}''$ Strips are attached to the Flanged Plate by a Threaded Pin 21, which is fitted with a Collar. The outer ends of the Strips are connected to the sides of the dumper by Double Brackets, and a $2\frac{1}{2}'' \times 2''$ Triangular Flexible Plate is bolted at each side of the Flanged Plate 20. The Strips 15 are connected by a $3\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip and are braced to the Flanged Plate 20 by $2\frac{1}{2}''$ Stepped Curved Strips.

One of the opening doors consists of two $12\frac{1}{2}''$ Strips connected at each end by Fishplates. The other is formed by three $12\frac{1}{2}''$ Strips joined by two Fishplates bolted together, by a $1\frac{1}{2}''$ Strip, and by a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip. A right-angle Rod and Strip Connector is bolted to each door and pivots on a Rod held by Spring Clips in a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip.

A Crank Handle 22 is mounted in a Double Bent Strip bolted to one flange of the Plate 18 and in a $1\frac{1}{2}''$ Strip fixed to the other flange. Two separate Cords are tied to the Crank Handle and to the front ends of the opening doors. A third Cord is tied to the centre of the Crank Handle, taken over a Pivot Bolt 23 and round a $\frac{3}{4}''$ Bolt 24. Two Cords are then tied to the end of the first piece at 25, taken round a $\frac{3}{4}''$ Bolt 26 and Threaded Pin 21, and tied to the rear ends of the doors.

Parts required to build the Tractor and Bottom Dump Truck: 5 of No. 1; 11 of No. 2; 4 of No. 3; 2 of No. 4; 12 of No. 5; 2 of No. 6a; 4 of No. 8; 8 of No. 10; 4 of No. 11; 14 of No. 12; 2 of No. 12a; 1 of No. 12c; 1 of No. 15; 2 of No. 15b; 3 of No. 16; 2 of No. 17; 1 of No. 18a; 1 of No. 18b; 1 of No. 19h; 2 of No. 19b; 5 of No. 22; 2 of No. 22a; 1 of No. 23; 1 of No. 23a; 1 of No. 24; 2 of No. 24a; 2 of No. 24c; 1 of No. 26; 1 of No. 27a; 11 of No. 35; 139 of No. 37a; 124 of No. 37b; 20 of No. 38; 2 of No. 38d; 1 of No. 40; 1 of No. 45; 2 of No. 48; 7 of No. 48a; 2 of No. 48b; 1 of No. 51; 2 of No. 53; 4 of No. 59; 3 of No. 90a; 2 of No. 111; 2 of No. 111a; 5 of No. 111c; 1 of No. 115; 2 of No. 126; 4 of No. 126a; 4 of No. 142c; 1 of No. 147b; 2 of No. 155; 1 of No. 186a; 4 of No. 188; 4 of No. 189; 5 of No. 190; 1 of No. 191; 2 of No. 197; 1 of No. 200; 2 of No. 212; 2 of No. 212a; 4 of No. 215; 4 of No. 221; 2 of No. 222; 1 No. 1 Clockwork Motor.

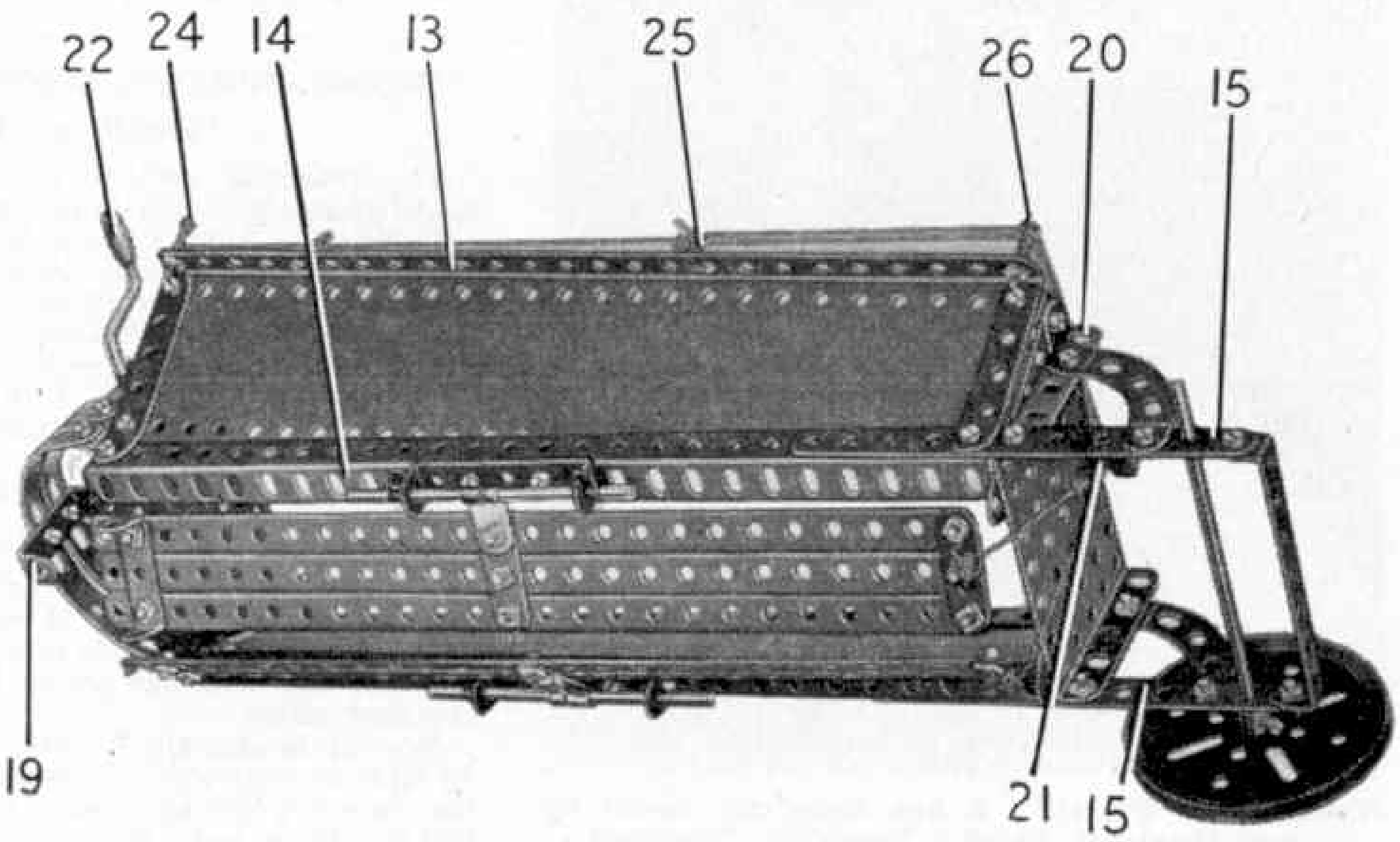



**Fig. 4. The bottom-opening doors of the Dump Truck and the operating mechanism are shown in this view.**

# Prizes for Meccano Models

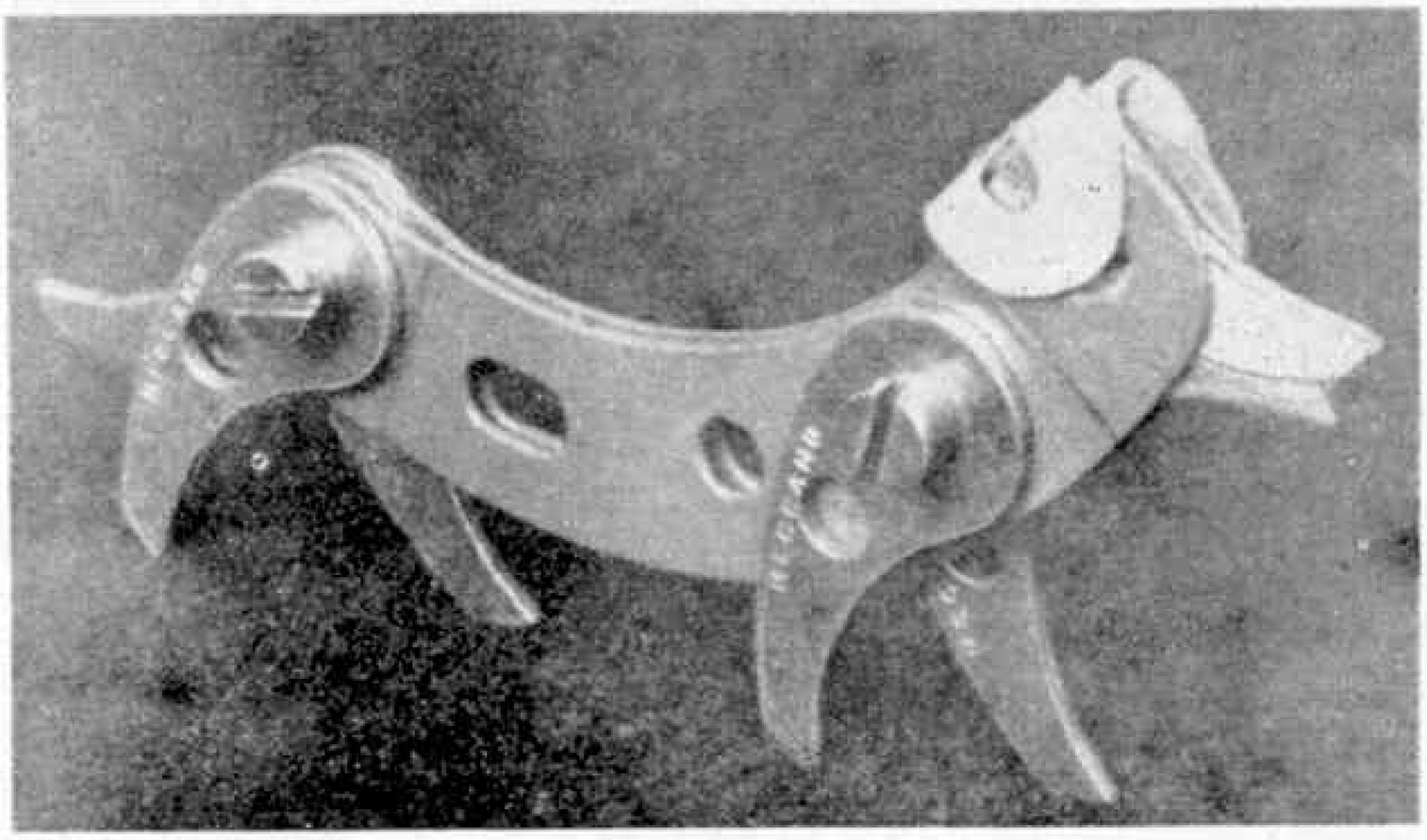
## Opportunity for Model-Builders of All Ages

If you own a Meccano Outfit and can build a model based on your own ideas, here is your opportunity to win a fine cash prize. It does not matter how small or how large your Outfit is or how old you are, and even if you live on some small remote Pacific island, you are equally eligible with model-builders living in this country to compete for the attractive prizes offered in the new Competition we announce this month.

All you have to do is to think of a new model, no matter what kind, and then set to work to build it as neatly and realistically as you can with the parts available to you. Maybe you have never taken part in a Contest before, or have only a small Outfit, and feel that you will not stand much chance if your model has to compete with more elaborate models built from much larger Outfits. We can assure you however, that your small and simple model will not be handicapped in any way, because when they judge your work the competition judges will take into consideration your age, the quantity and variety of parts from which your model is built and the degree of ingenuity and skill you have shown in using them to the fullest advantage.

Don't forget, your model can be of any kind whatever. Ships, cranes, vehicles, aeroplanes, machines of all types; all of these will make suitable subjects, but we would strongly advise you to make a careful choice and select a subject that you can model realistically with the Outfit you have. It would be foolish to select a large hammerhead crane, for example, if you possess only a No. 2 or 3 Outfit. You would do far better to concentrate on a simple windmill or truck, and leave the more elaborate subjects to those who possess really big Outfits.

When you have built your model make a sketch of it, or better still have it photographed. You should then write your age, name and full address on the back of the drawing or photograph and send this, together with a short description of the model, to *March Meccano Competition, Meccano Ltd., Binns Road, Liverpool 13.*



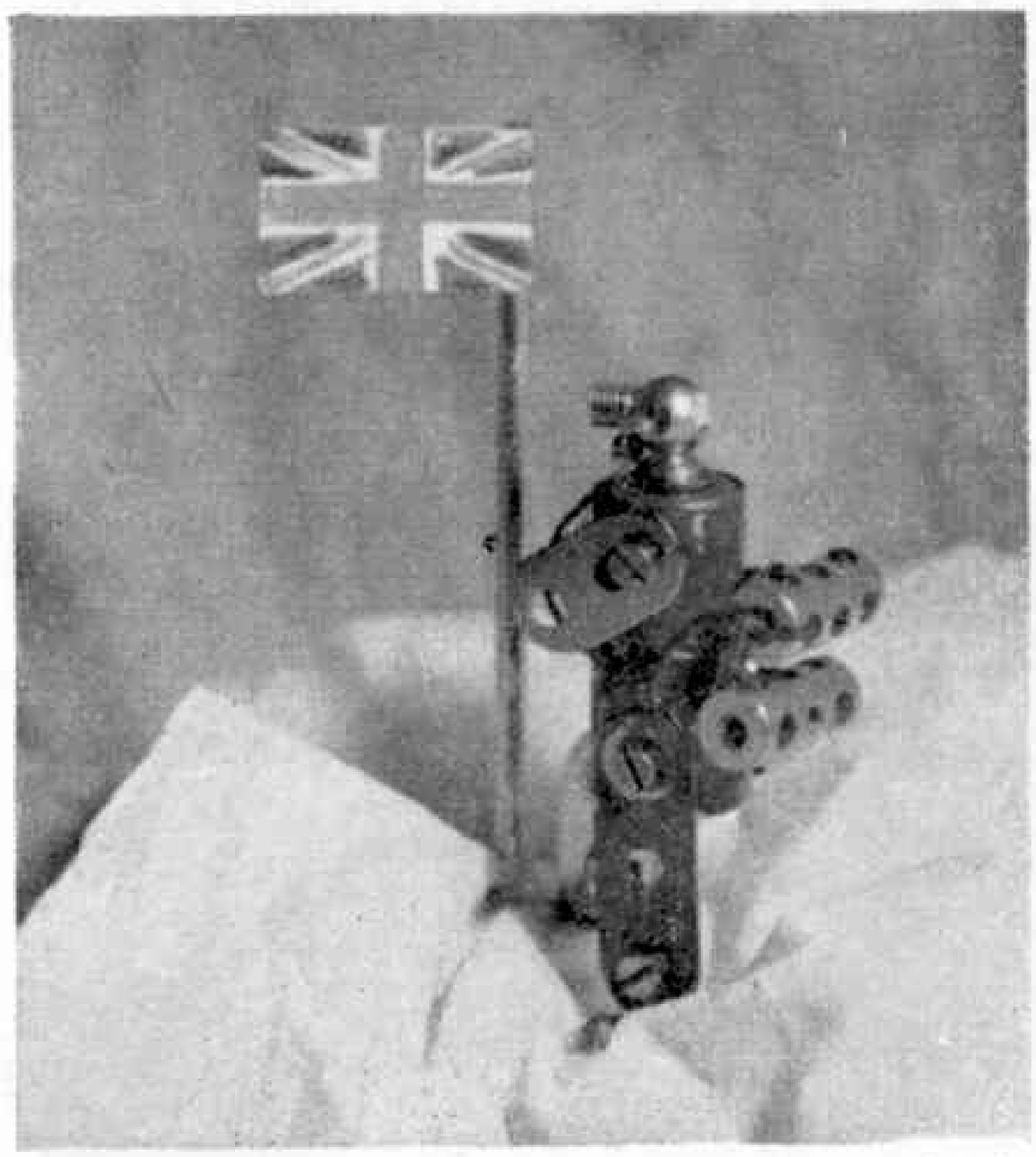
**This realistic Dachshund dog, built from a few Meccano parts, won First Prize for C. E. Wrayford, Bovey Tracey, in the "Simplicity" Model-Building Competition.**

You must post your entry in time to reach Liverpool not later than 31st May, next.

Entries will be divided into two Sections. A for Competitors under 12 years of age, and B for Competitors over 12 years of age, on 31st May 1955.

The following prizes will be awarded in each Section: First, Cheque for £4/4/–. Second, Cheque for £2/2/–. Third, Cheque for £1/1/–. Ten Prizes each of a P.O. for 10/6 and Ten Prizes each of a P.O. for 5/–.

Now don't forget! The closing date is 31st May.



**"Conquest of Everest", a fine Simplicity model by Graeme Hopewell, District Township, Transvaal.**

### MODEL-BUILDING COMPETITION RESULTS

#### "Simplicity" Contest

The principal awards in the 1954 "Simplicity" Model-Building Competition were as follows:

**Section A.** First, Cheque for £3/3/–: G. Hopewell, Transvaal, South Africa. Second, Cheque for £2/2/–: F. Willingham, Bradford 8. Third, Postal Order for £1/1/–: M. Macdona, Lusaka, N. Rhodesia.

**Section B.** First, Cheque for £3/3/–: C. E. Wrayford, Bovey Tracey. Second, Cheque for £2/2/–: A. L. Walton, Hexham. Third, Cheque for £1/1/–: S. J. Newman, Swanley.

The two models that were awarded the First Prize in each Section respectively, are illustrated on this page. The Dachshund, by C. E. Wrayford, is a novel and excellent example of realistic construction with a few parts, and I think it would be hard indeed to improve it, although it is unfortunate that the Pawls used for the ears had to be bent slightly to obtain the best effect.

Novelty is also the keynote of *Conquest of Everest*, by Graeme Hopewell, who has succeeded in representing the climber's special oxygen apparatus by using only two Couplings and a piece of Cord!

# Club and Branch News

## WITH THE SECRETARY

### SUMMING UP THE WINTER SESSIONS

Of the scores of Committee meetings which I have attended, and at some of which I have presided, I have always enjoyed most those held at the close of the Committee's period of office or at the end of the year's work. Then each member has given a brief verbal report of the particular activity for which he has been responsible, and under the guidance of the Chairman a composite report has been drawn up, incorporating the main points of the verbal reports.

I commend this idea to all Clubs and Branches that so far do not do anything along these lines. An official Club or Branch report of the Winter's work can be read to members, their parents and friends at a final Open meeting held to mark the close of the present Session. Such a meeting is a grand opportunity for members' parents to hear just what the Club has accomplished during the Winter meetings.

### START SAVING FOR SUMMER OUTINGS

A year ago I stressed the importance of starting in good time to build up a Club or Branch fund to cover the expenses of outings during the Summer months. Some Clubs and Branches take the wise step of having an all-year-round levy of one penny or twopence a week per member, and thus find themselves with money available for rambles, cycle run refreshments, and outings generally right at the start of the outdoor season. Such a happy state of affairs saves the Treasurer a lot of anxiety.

Even if a start in this direction is only made now, the useful nucleus of an Outings Fund will have accumulated by the time the first Summer Session really gets under way.

## CLUB NOTES

LAUNCESTON M.C.—Meccano model-building and work on the construction of a model glider have kept members busy. Four excellent films shown at a recent film show consisted of two borrowed from the Bristol Aeroplane Company and two from the de Havilland Aircraft Company. A waiting list has been started for prospective members. Club roll: 63. *Secretary:* R. J. Keast, Lytham, Dunheved Road, Launceston, Cornwall.

ST. GEORGE'S (GATESHEAD)—There has been a very satisfactory increase in membership. The subject of a Meccano model-building competition was *Things from a Circus*, and some excellent models were built. Table tennis has become very popular. Club roll: 28. *Secretary:* J. Lawrenson, "Egremont," 10 Felton Crescent, Gateshead 8, Co. Durham.

THORNTON GRAMMAR SCHOOL (BRADFORD)—Several new members have been enrolled. The good variety of models displayed at the school Open Day attracted much attention. Interest is being shown in the construction of model aircraft, and a small library of *M.M.s* and *Aeromodellers* has been started. A charge of 1d. is made for each magazine borrowed, and a 1d. fine for each extra week it is retained. *Secretary:* Ian Shaw, 116 West Park Road, Four Lane Ends, Bradford 8, Yorkshire.

MILE END (PORTSMOUTH)—The Club is now comfortably housed in new quarters in the Buckland Congregational Church premises, Kingston Road, Portsmouth, and meetings are held every Wednesday 7.0–9.30 p.m. New members will be welcomed. The Secretary is purchasing an "Adana" printing machine, which will be used for printing Club circulars, newsletters, etc. Talks on *Model-building* and *The use of Pulley Wheels for different Speeds* have been given. A successful Social has been held. Club roll: 42. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

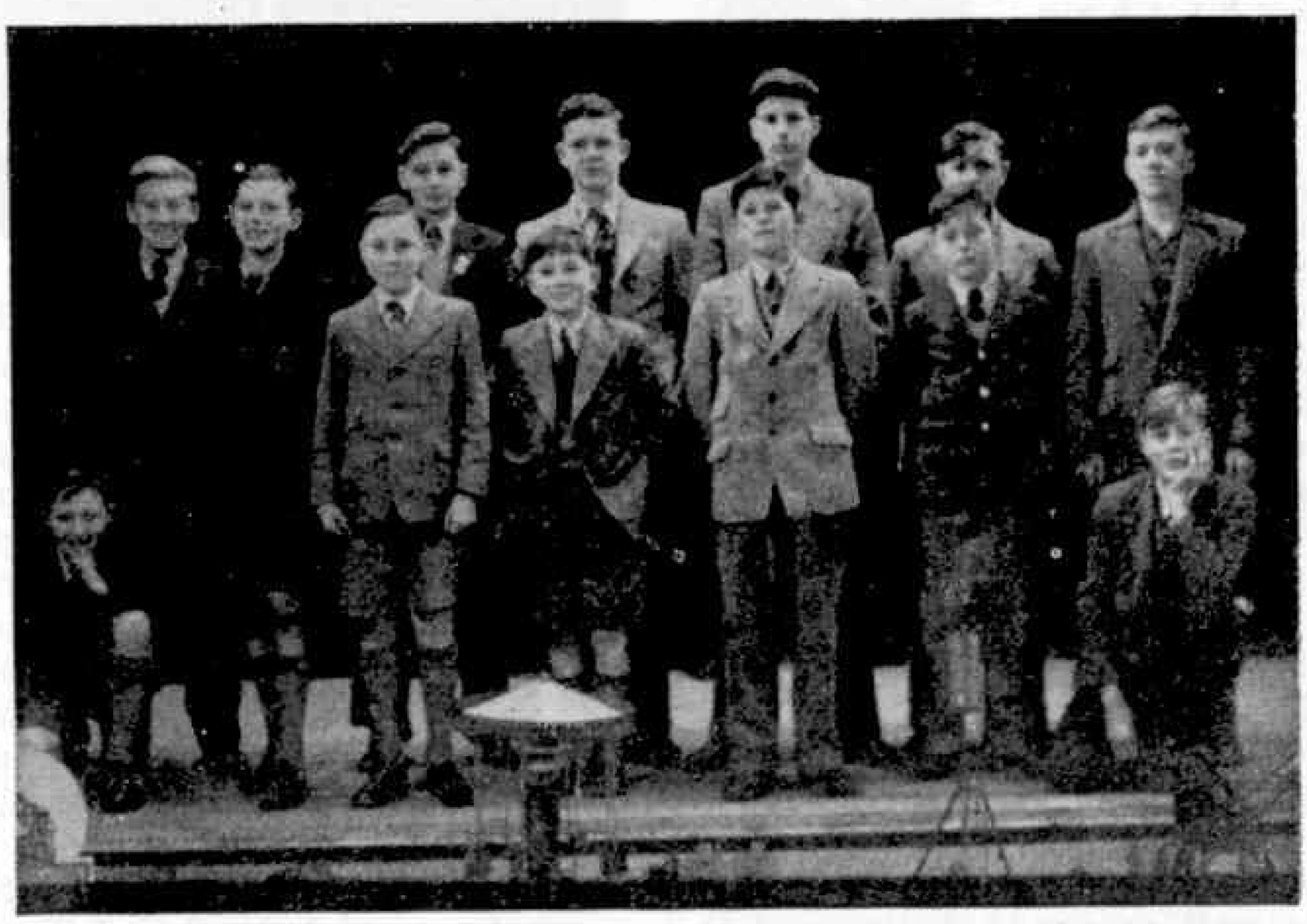
## BRANCH NEWS

HALE END (LONDON)—Recent activities included a very interesting visit to British Railways' locomotive depot at Neasden. *Secretary:* A. L. Coe, 463 Hale End Road, Highams Park, London E.4.

KENTISH TOWN (LONDON)—Important improvements have been made to the Branch layout. Instead of having the usual annual party at Christmas, a visit was paid to the Schoolboy's Own Exhibition, London, early in January, where members were thrilled by the fine displays. *Secretary:* J. A. Kirby, 9 Busby Place, Kentish Town, London N.W.5.

### UNINCORPORATED BRANCH

CHRISTCHURCH — Meetings devoted to track operations have been very successful, with layouts of quite original plan laid down. Variety has been introduced into the programme by film shows and quiz evenings. *Secretary:* J. C. R. Arthur, 13 Station Road, Christchurch Hants.



**Officials and members of the St. George's (Gateshead) M.C. The Secretary, J. Lawrenson, is third from the right in the front row. This steadily progressive Club was affiliated with the Guild in July 1951. Extensive Meccano model-building during the winter and Cycle Runs in the summer are the Club's main activities.**

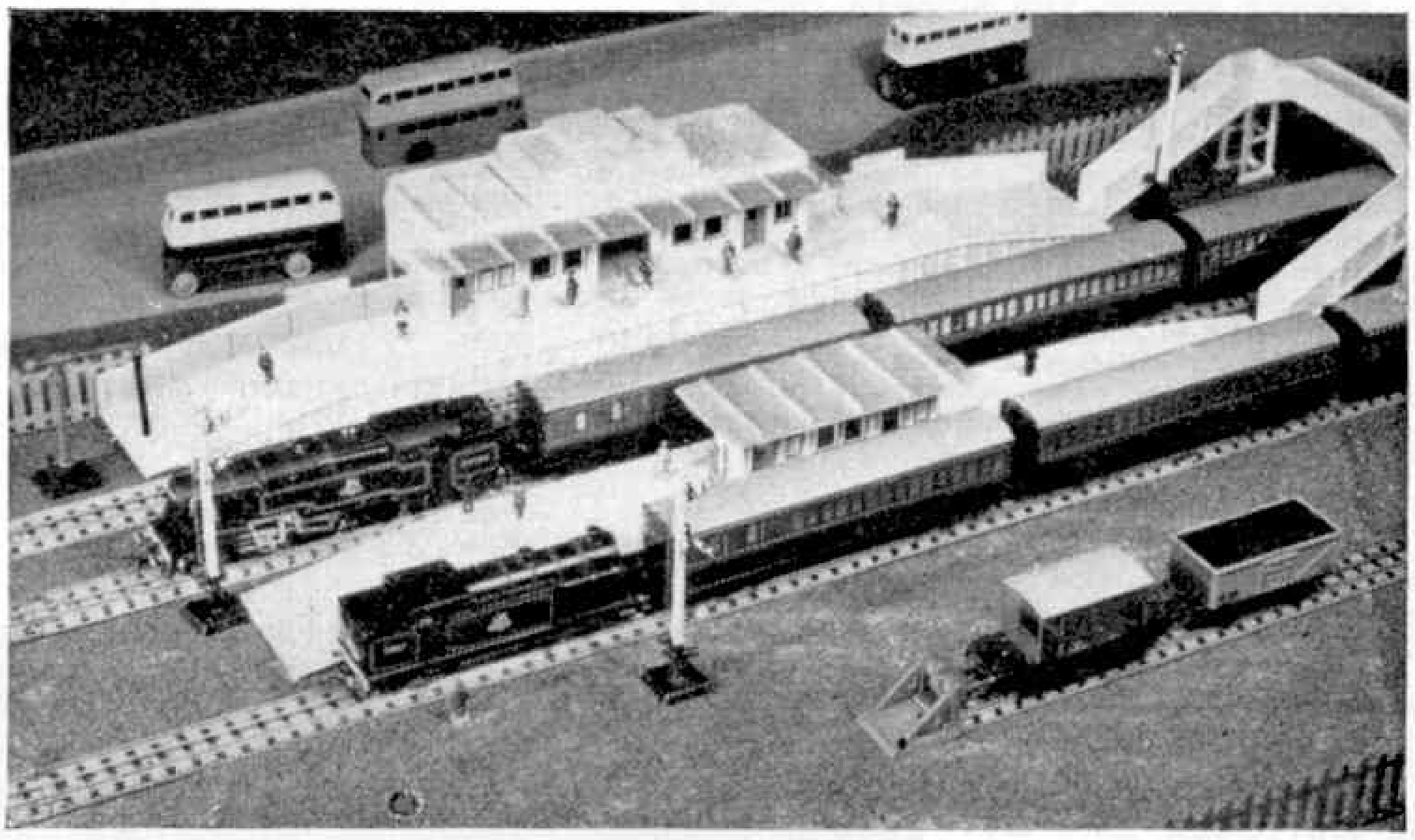
## HORNBY RAILWAY COMPANY

By the Secretary

# Tank Engine Talk

FROM the plentiful correspondence that I receive from readers and from actual contact with Hornby-Dublo owners, I am sure that the recent addition of the Hornby-Dublo 2–6–4 Tank Locomotive and the corresponding Suburban Coaches has made many layouts busier. These additions have made it possible for the Dublo owner to deal with a further variety of traffic instead of being restricted more or less to express passenger or ordinary goods train working.

Many Hornby-Dublo railways have just recently begun operations with one or other of the new 2–6–4 Tank Train Sets. Some at least of these no doubt will be built up to include some of the other engines and stock that have been well known in the System for some time. Where this is done, and where the new components have been added to the older ones, however, as on so many systems, working possibilities are considerably improved.



**Hornby-Dublo Tank Locomotives take part in the "suburban rush." The new 2-6-4T runs through on the inner track while the 0-6-2T is at the Island Platform, each with a train of Suburban Coaches.**

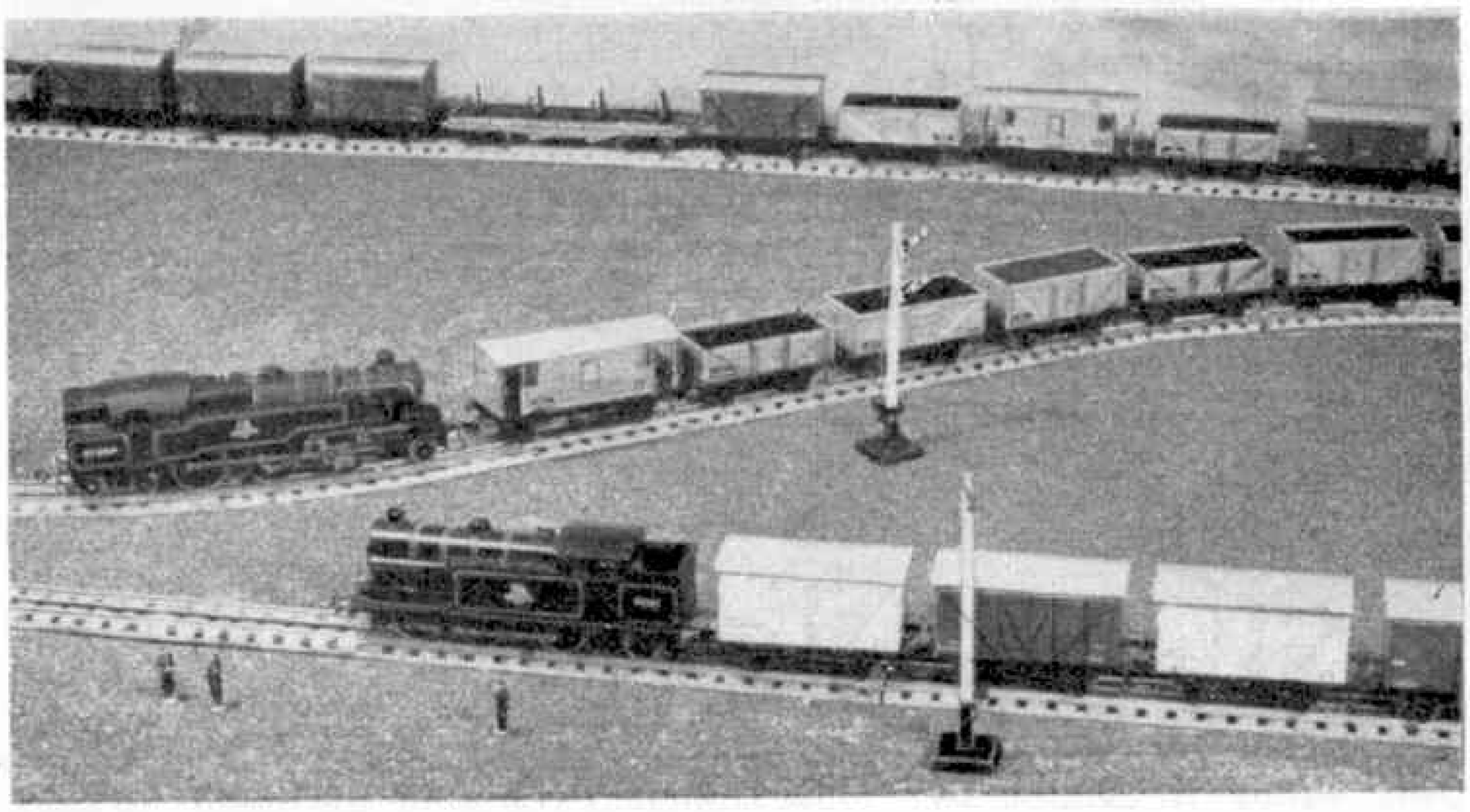
The new 2–6–4 Tank is of course the ideal engine for suburban work and the corresponding coaches are exactly what is required to keep it company on such duties. At the same time we must not forget that the familiar Hornby-Dublo 0–6–2 Tank is quite suitable for passenger as well as goods duties and it too can be used, perhaps in company with the new engine, on such work. This is the sort of thing that is shown in our first illustration, where a station layout of suburban type appears. Each type of tank engine is busy with trains of the new Suburban Coaches in coping with our "rush" traffic of the type that is common on many routes in the morning, when people are going to work or to school and so on, and in the evening when they are returning home. I expect that most of you are familiar with services of this kind and probably many of you use them practically every day. If you do you will probably have already a fair acquaintance with the operations, the way the trains are made up and so on; and if you have not already studied these things, then here is a suggestion that you can follow up.

Although primarily a suburban engine the new Tank can be used for fast trains over moderate distances, and this gives the Hornby-Dublo owner the opportunity for working out some interesting schemes. It can perhaps be fitted into an engine-changing programme, which can be carried out effectively with the aid of the Electrically-Operated Uncoupling Rail. For instance, the main line 4–6–2 tender engine can be detached at a station stop and the 2–6–4 Tank can be attached in its place in order to complete the run. Alternatively, the 2–6–4 Tank makes a good engine for working a separate section

of a main express that is to be attached or detached at some junction point. Apart from the interest of such working, the new Tank with two or three Corridor Coaches makes an imposing combination.

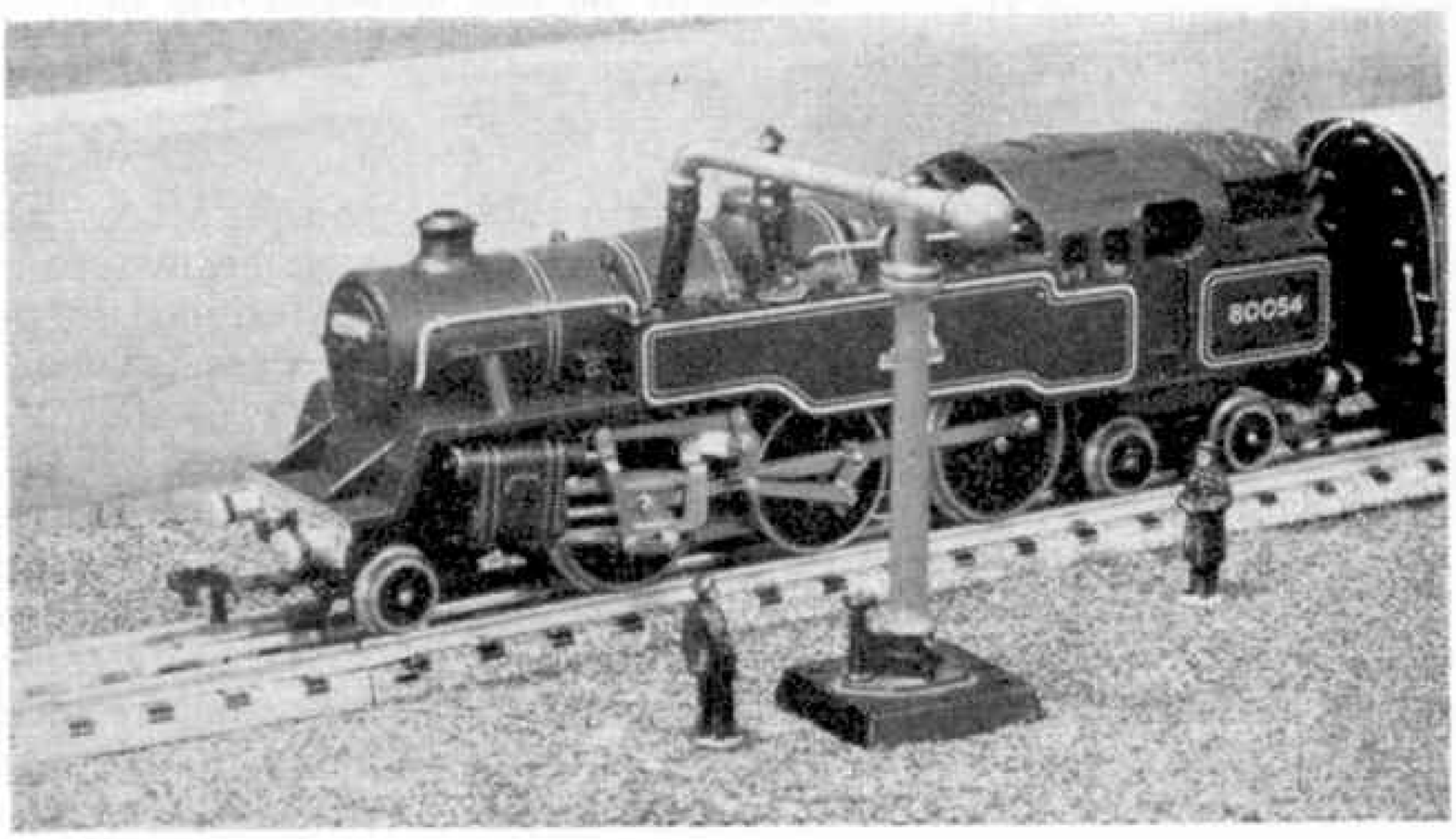
As the real B.R. 2–6–4T is described officially as a mixed traffic locomotive it can be expected to take part in certain freight workings, and on a Hornby-Dublo railway there will be plenty of opportunity for it to do so. It may do work of this kind in between various passenger train jobs and as you probably know the 2–6–4 Tank does look most impressive at the head of a long train of goods vehicles of various kinds. Most of you may have already discovered that it is readily manœuvred in the goods yard, although it is of course a bigger engine than the standard 0–6–2.

The slow running adjustment that I have referred to before in these pages is a valuable feature where shunting work is to be carried out. However good an engine may be, the driver's touch is still important and your own management of the control handle can make a lot of difference to the behaviour of a Locomotive. There is no sense in bumping the vehicles together heavily in order to couple up. A gentler approach is much more impressive to the onlooker and more satisfying to the operator, as well as being more realistic. Then there is much less likelihood of the couplings getting out of adjustment, a point that I hear quite a lot about from over-enthusiastic "drivers" of Hornby-Dublo engines.



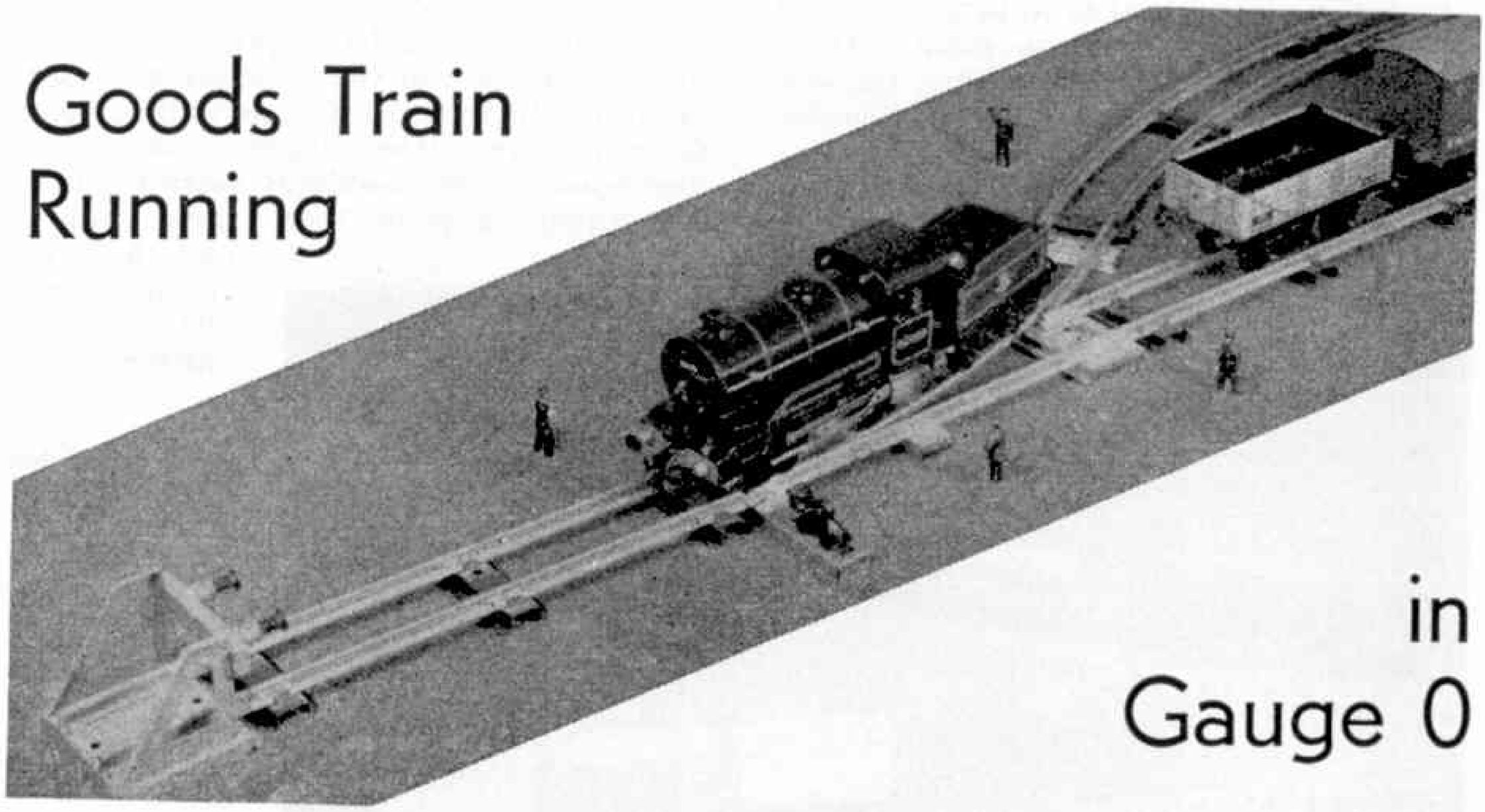
**A Hornby-Dublo 2-6-4 Tank pulls out from the yard with a long train of empties. In the foreground the 0-6-2 Tank is busy with a train of vans, including some for perishable traffic.**

Tank engine duties inevitably involve fairly numerous calls at water tanks or columns in order to fill up. Locomotive water in Hornby-Dublo is looked after by the popular and effective Water Crane. I wonder how many of you have tried the scheme shown in our last illustration. On the Water Crane shown the delivery pipe has been cut short, so that when the swinging arm of the Crane is brought round the pipe will just fit over the tank fillers. This gets over the difficulty of persuading the pipe to "stay put" while the engine takes water. The short pipe does not look too unusual when not in use. One can come across such things in actual practice.




**Taking "water." The pipe of this Hornby-Dublo Water Crane has been cut, to allow it to be swung over the side tanks of the 2-6-4T.**

# Goods Train Running in Gauge 0



THE little scene above is a reminder that once an engine has hauled a train into a plain Buffer Stop siding it cannot be moved until the train itself has been disposed of. The train can be backed out by the engine, and if the general idea is simply to refuge the train for the time being while another passes on the main line, this is a fairly satisfactory arrangement. Where such operations form a regular part of the working a loop line of course is better, as the refuged train can easily run straight out on the main line once the way is clear.

Now in goods yards it is very desirable to have some means of freeing the incoming engine from its train, the wagons of which may have to be shunted into various roads. Certainly another engine can come on at the rear end in order to carry out the shunting work, but it is not every Hornby Railway owner who has enough engines to allow him to do this. So the road engine—that is the one that has brought the train along the main line—must be freed in order to carry out the shunting part of the job.

It may be that there are various sidings lying behind the train, once it has entered the yard, and then the job of disposing of the wagons is simple. Such arrangements, however, mean a good deal more space, and on most layouts a running round scheme such as that shown in the picture is to be preferred. So we arrange for a loop line to join the arrival siding, the loop points at the inner end being placed so that there is just sufficient track for the engine to move on to, once it has been uncoupled. When it has run on to this the Points are turned for it to move into the loop.

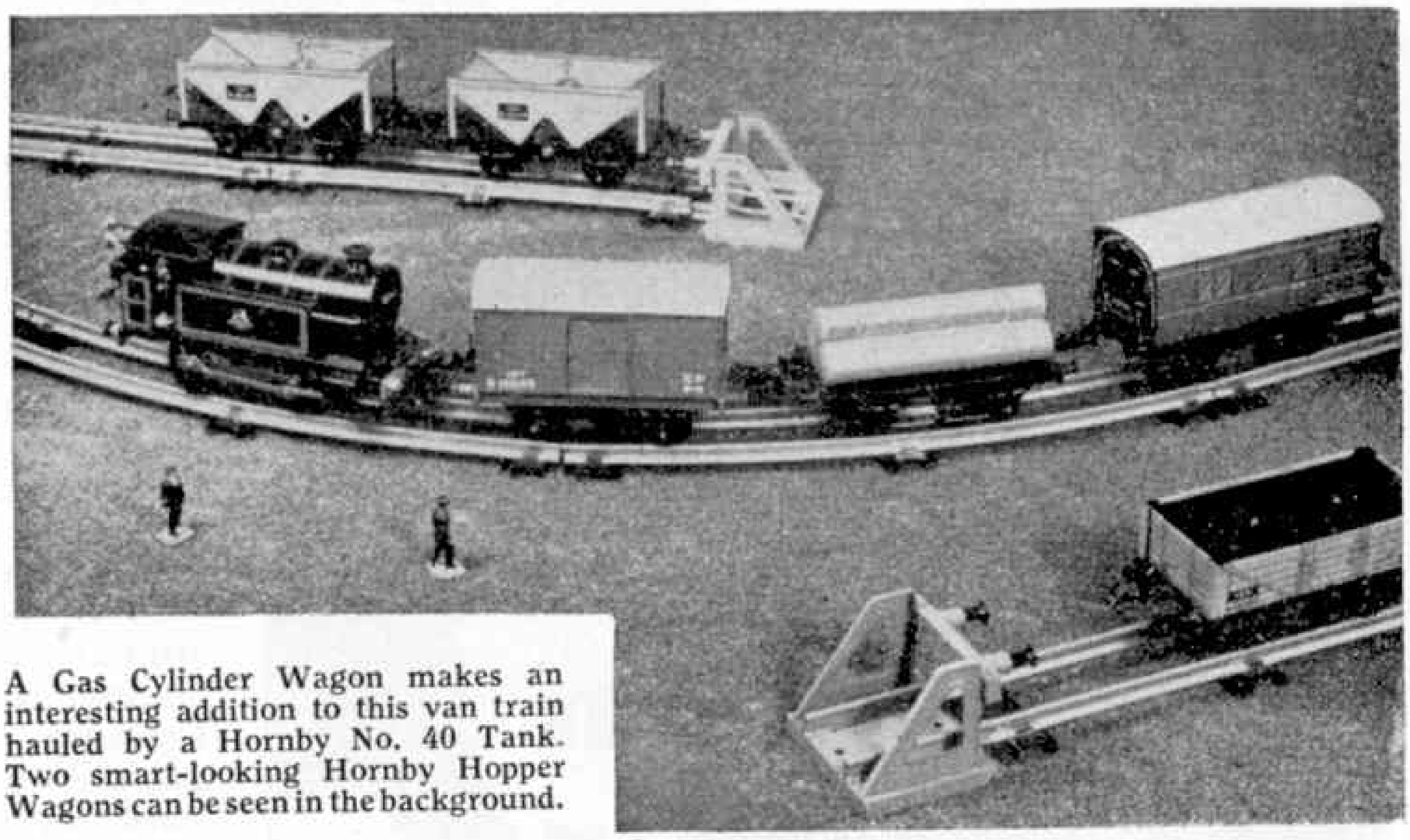
This plan may mean that slightly less actual siding space is available and this may possibly restrict the number of wagons that can be accommodated; but on the whole the advantage of being able to run the engine round can be considered more important.

While main line runs and station working may form the greater part of the operations on a clockwork railway, there is a lot of fun to be had in what we may call station and yard work and in the movement of vehicles here and there in order to build up a train ready for the next cycle of operations. In addition, there are the odd trains that run for stores, parcels and similar purposes, well known to railwaymen, but not often reproduced in miniature. There is a lot of interest in such trains, not only because some of them take peculiar loads, but also—and this is more important from the miniature railwayman's point of view—because they are often composed of a varied assortment of rolling stock.

We have referred to such trains once or twice before in these pages, but there is no harm in drawing your attention again to what we may regard as a stores train,

**In the illustration above Hornby No. 50 Locomotive has been uncoupled from its train and is backing into the loop in order to run round and shunt the wagons.**

or part of it, shown in the upper picture on this page. This includes the ordinary Goods Van, which is a useful vehicle because it has sliding doors and can be loaded. Then there is a Gas Cylinder Wagon, a type often seen in transit between works and carriage depots, and finally there comes a Passenger Brake Van. Vans of the latter type are used for all sorts of purposes, and they do not by any means spend all their time running in passenger trains.

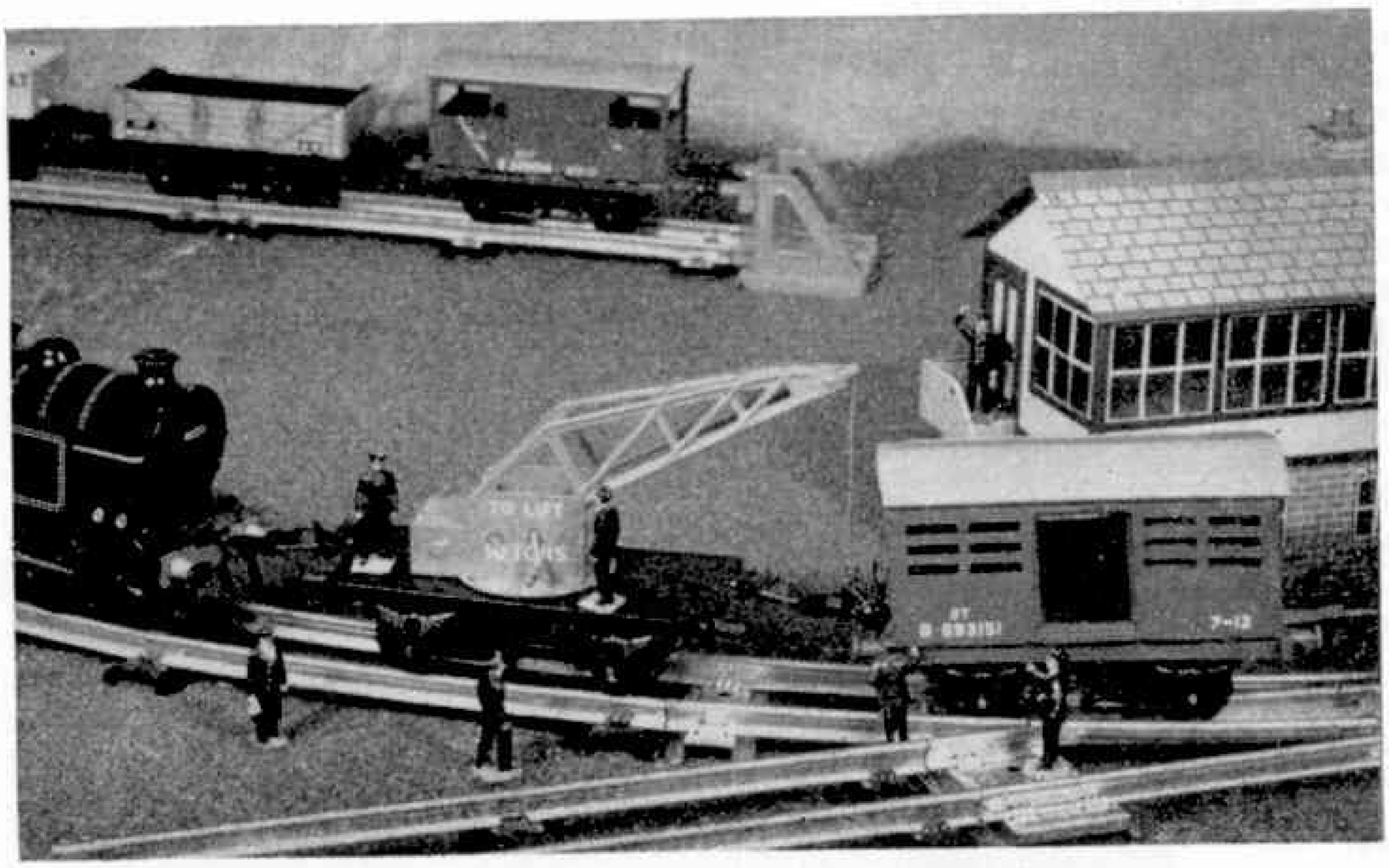


**A Gas Cylinder Wagon makes an interesting addition to this van train hauled by a Hornby No. 40 Tank. Two smart-looking Hornby Hopper Wagons can be seen in the background.**

On the question of stores, this time of the locomotive department, the Hornby Hopper Wagons in the same picture are of interest. They can be used quite suitably for "Loco. Coal," bringing the necessary fuel along to the locomotive depot. In addition, these Wagons have many other uses on a Hornby layout, their bottom-discharge or hopper doors providing the means of a good deal of fun with suitable loads and unloading arrangements. This is a point that we hope to be able to go into later on.

Mention of the locomotive depot reminds us of the equipment usually kept there to deal with what are generally known as "breakdowns". An important feature of the real breakdown train is of course the crane. In the Hornby System there is an effective Crane Truck, a vehicle that offers plenty of interesting play. It must of course be steadied by the operator's hand when a lift is being carried out. The lower illustration on this page shows the Crane Truck all ready to heave up one end of a Hornby Cattle truck that has become derailed. Crane management in miniature has plenty of interest, as those of you who try it will quickly find out.

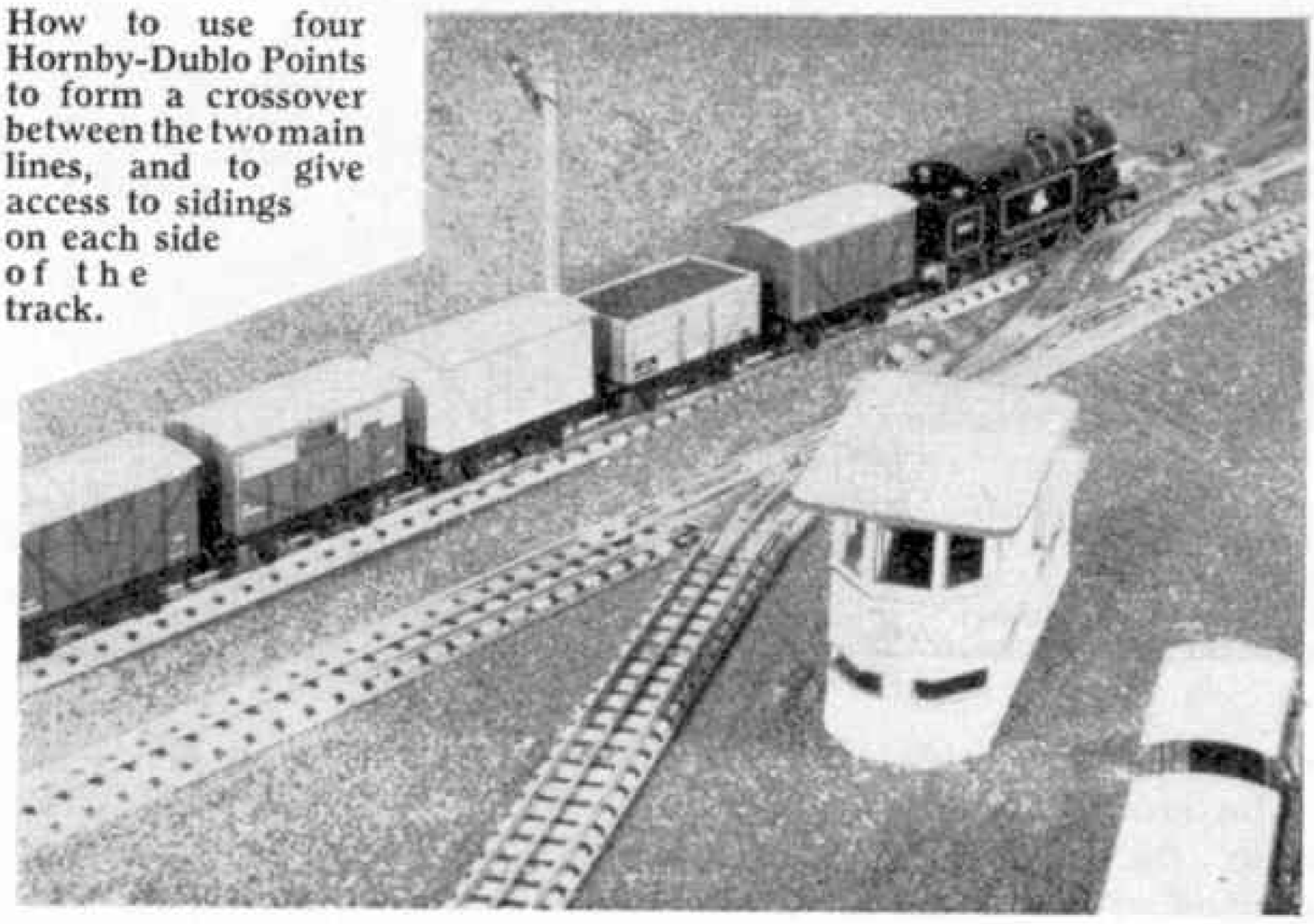
A crane that can travel, like that on the Crane Truck, has its special uses, yet there is plenty of scope for the Goods Yard Crane (Dinky Supertoys No. 973) with its movements.



**A job for the crane! A Hornby Cattle Truck with one pair of wheels off the track is ready for lifting by means of the Crane Truck.**

# Points, Crossings and Sidings

THERE are many things to interest the layout enthusiast in the two pictures on this page. Look, for instance, at the upper one. In it we have a normal double track main line, with the up and down tracks connected by Points forming a crossover. This is quite a usual arrangement and it can probably be found on almost any Hornby-Dublo layout on which double track is in use. At the facing end of each of the two Points forming the crossover, however, there is a further set of Points in each track, and these branch off to reach sidings on the two sides of the main line.

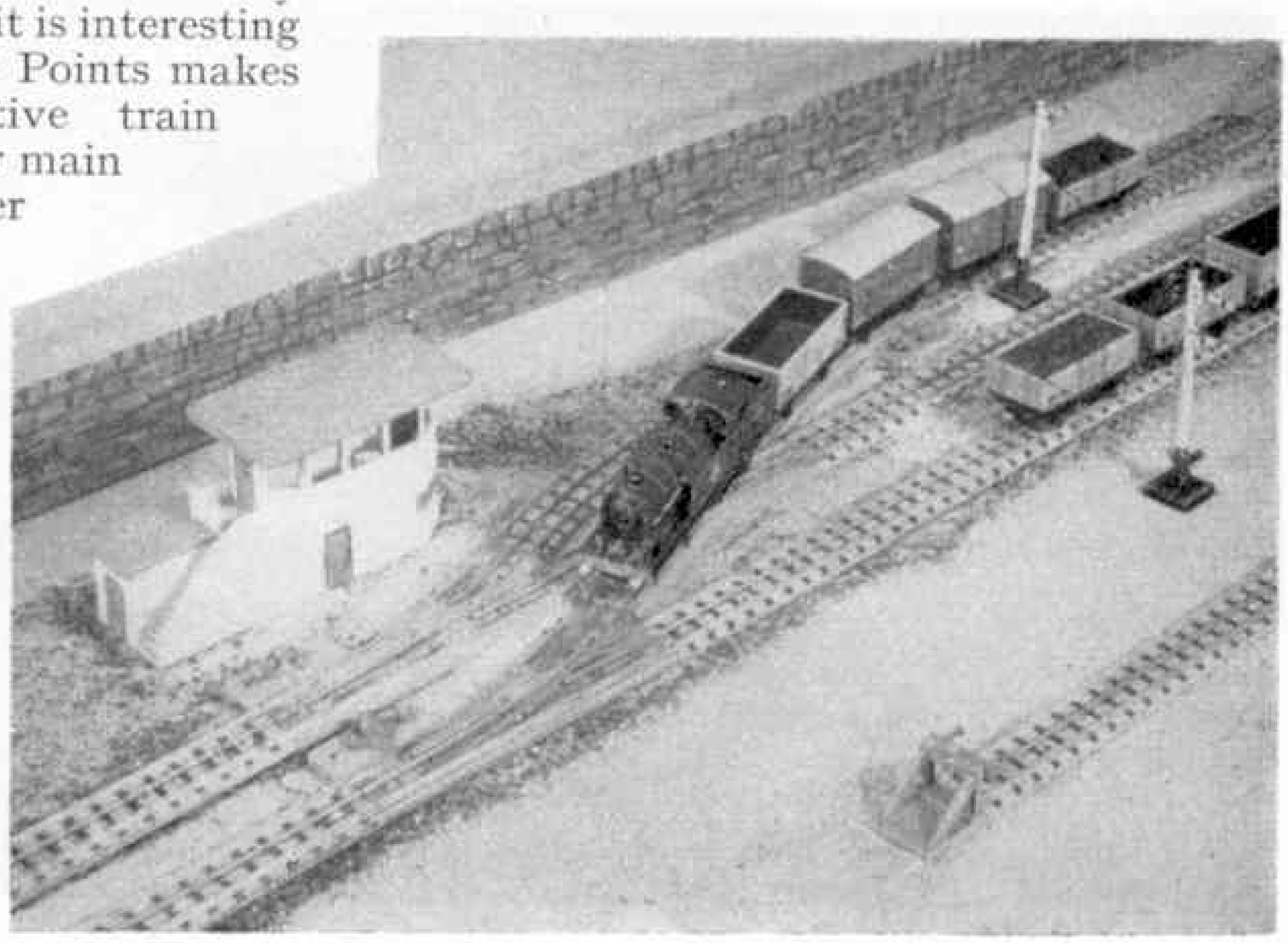


**How to use four Hornby-Dublo Points to form a crossover between the two main lines, and to give access to sidings on each side of the track.**

There is of course nothing extraordinary about this arrangement, but it is interesting to note how this use of four Points makes for a variety of attractive train operations. A train on either main track of course can easily enter the sidings on its own side of the track. But by a backing movement, it can also be transferred to the other main line and to the other siding if we wish to do this. Furthermore, a train in either yard can reach either of the two main lines, or it can make its way through the Points to the yard on the opposite side.

This latter crossing-over movement could be performed directly if there were two Diamond Crossings, but no Points, one on each main track, adjacent to one another. But this arrangement would not allow the operator to direct a train to the main line as well. The scheme shown takes up rather more room than if Diamond Crossings were used, but it does present a combination of special advantages.

Now look at the lower picture. This shows a combination of Points and a Crossing that is specially useful where a siding or yard on *one* side of the main line has to be accessible from both main tracks. In the example shown the engine is moving some wagons out of the siding in order to add them to the vehicles already waiting on the main line. This is a typical everyday working that involves crossing the opposite track. Any train on the opposite track must be held by signals during the actual crossing-over, unless the layout allows the operation to be completed before this other train has to pass.



**The Hornby-Dublo 0-6-2 Tank moves wagons from the siding to the inner main line over the Diamond Crossing.**

# From Our Readers

*This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.*

## A PRIZE-WINNING STATION

A First Class award in several successive years in the annual competition for the best kept station, which includes the layout of the flower beds, appearance of the buildings and administration, is the proud achievement of the Station Master at Cloughton. This station in the North Eastern Region of British Railways is on the coast route between Scarborough and Whitby, about seven miles north of Scarborough.

All the plants are grown from seed. Loving care and skilful cultivation result in a profuse display of a great variety of blooms, with a background of well trained rambler roses. The windows shine with spotless clearliness, and within the office one will see tidiness that suggests efficiency. It is a pleasing sight to see the colour of the flower beds conjured up in the framed artistically designed certificates hanging side by side upon the wall, reminders of the past summers and harbingers of wallflowers all fragrant after rain during next spring.

Railway enthusiasts would delight in the white-walled lamp room, with the oil lamps polished and shining like mirrors, yet still being used for daily service. The signal cabin is worth seeing just for the brightness of the metal levers, so well kept that they look as good as, if not better than, equipment prepared for an engineering exhibition, and it is attractive and pleasing in all other respects.

H. D. Walkland (Northallerton).

**Cloughton Station, on the line between Scarborough and Whitby. Photograph by H. D. Walkland, Northallerton.**

## THE HONG KONG FUNICULAR RAILWAY

One of Hong Kong's transport systems much used by tourists and inhabitants alike is the Peak Tram, taking one to a height of 1,400 feet in little over eight minutes, normally on a 15-minute service.

The railway was built in 1888, and was then steam driven with cars hauled by an endless cable. In 1925 modern electrically driven haulage equipment was installed. The trams now in use were completed in 1951. To a great extent they are made of aluminium, and each is 35 ft. long and 8 ft. wide, with a carrying capacity of 62.

Each tram is fitted with separate cables 5,030 ft. in length, which are wound on independent drums geared together and driven by one motor. To save electricity the cars balance each other, the weight of the descending car helping to pull up the ascending one. They are controlled by one engineer at the upper terminus, who can see from a track indicator exactly where the trams are.

In each tram is a brakeman who communicates with the engine room by a system of signals. In the event of an emergency it is only necessary for the brakeman to release his hold on the safety brake bar. This action automatically closes two powerful jaws, which are fitted at each end of the chassis on to the centre track rail, which is fastened firmly to the track bed. This powerful braking system will stop the tram within 8 ft. on the steepest gradient.

The rails are single track up to May Road, but they then branch into two to allow the cars to pass, which they do, just above May Road.

The railway doesn't run straight up, but ascends in a gentle semi-circle, ending about two thirds of the way up the mountain. So the view from the cars is continually changing as they ascend and descend. In places the line crosses bridges, one of which is seen in the accompanying illustration, and the densely forested hillsides slope down steeply below them to very great depths.

M. J. Robinson (Framlingham).

**Crossing a bridge on the funicular railway in Hong Kong. Photograph by M. J. Robinson, Framlingham.**

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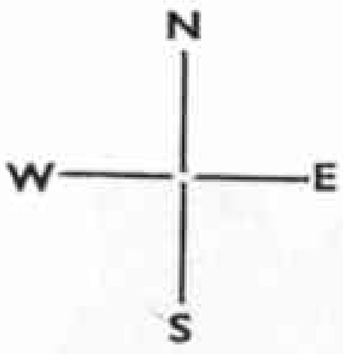


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*For other Stamp Advertisements see also pages 162 and xviii*

# Stamp Collectors' Corner

By F. E. Metcalfe

## BASUTOLAND

IT is a rather sore point in South African Government quarters that the territories of Basutoland, Bechuanaland and Swaziland are outside its jurisdiction, as they are more or less embedded in the Union, particularly Basutoland. This is not the place to discuss political matters, however. We are only concerned with the philatelic aspect, and as Basutoland has just issued a fine pictorial set, now is the time to look at the new issue, and also at stamps from this very interesting country in the past.

Basutoland is a tiny country of slightly less than 12,000 square miles—nearly twice the size of Yorkshire—and as the map shows, it is enclosed within Cape Province, Natal and the Orange Free State. Its capital is Maseru, and its population, almost entirely native, is over half a million. There is a certain amount of grain cultivation and the genial climate is not unsuited for the rearing of sheep, cattle and horses. Don't be afraid—that is about all the geography I am going to inflict on you. But if you decide to collect this country's stamps, you will have enough for a write-up. In any event the new set, to which I will refer in detail later on, will attract many. There are stamps for at least half a dozen thematic collections, and of course it comes into that ever growing group, a QEII collection.

Basutoland was separated from Cape Province in 1884, but it was not until 1933 that it had its first set of stamps. A single design was selected for the ten values from ½d. to 10/–, with mountains, and surely the biggest crocodile ever, and a portrait of King George V. Between 1933 and 1938 there were two commemorative sets, one in 1935 to commemorate the Silver Wedding of King George V, and another to mark the Coronation of King George VI.

There is nothing much that I need to say about these three sets, for they are quite straightforward. This brings us to 1938, when the existing design, mountains and crocodile, was adapted for the new reign by the substitution of the portrait of King George VI. It is this latter set that is being replaced now. Gibbons give no shades for the KG VI set, but actually there are one or two very good ones, and the Commonwealth Catalogue lists several, all well worth looking out for. There is also a very nice variety on the 1d. value; in the hill in the middle distance at the right hand summit is a constant mark that has all the appearance of a tower and is listed as such.

The next commemorative set consisted of the three Victory stamps (in pairs) of South Africa, overprinted *Basutoland*. These are best collected in pairs, but they are not at all scarce and there should be no difficulty in getting a set for less than 2/–. Next, in 1947, a set of four stamps was issued to commemorate the visit to South Africa of King George VI and Queen Elizabeth.

Again a set will be easy to pick up at a couple of shillings or so, for thousands were bought at the time, such was the enthusiasm for the event. After that we had the two Silver Wedding stamps, in the design adopted for the colonies, in 1948; the U.P.U. set in 1949, again like the rest of the colonies; and finally the Coronation stamp in 1953.

Besides these, Basutoland has two Postage Due stamps and has also had in the past four official stamps, ½d., 1½d., 2d. and 6d. values in the first King George V set, which were overprinted OFFICIAL. A set of four would be cheap at £50, but the faker has been at work, and the average collector would hardly be able to spot the stamps with the forged overprints. So take care! These are best left alone.

There are 11 stamps, of values ½d., 1d., 2d., 3d., 4½d., 6d., 1/–, 1/3, 2/6, 5/– and 10/–. Each has a separate design, in two colours, and fine designs they are too, as follows: ½d., Qiloane, a mountain near the capital, Maseru; 1d., the Orange River; 2d., a Mosuto Horseman; 3d., a Basuto Household; 4½d., Maletsunyane Falls; 6d., a herdboy with Lesiba; 1/–, a pastoral scene; 1/3, the Lancer's Gap; 2/6, Old Fort at Leribe; 5/–, Mission Cave House; and 10/–, the gathering of mohair. Don't look too closely at the design of the 10/– value, for it looks as though they are pulling out the hair, which must be a pretty painful job for the poor animal.

Now it is not all of us who can afford to go up to the 10/– value, or even the 5/– one. But that need not deter us, for even with a few coppers we can buy a nice little set, which carefully mounted and nicely written up will make a splendid page.

From the descriptions given, it will be seen that there is any amount of material for various thematic collections, such as landscapes, native types, scenery, animals, rivers, waterfalls, old buildings, etc. Without a doubt these pictorial sets do provide a lot of material and we can be thankful that the authorities have had the enterprise to issue pictorial sets.

Basutoland has had quite a short philatelic history, and leaving out the official stamps it would not be a hard or expensive task to complete this country.

If to Basutoland you want to add another similar country, with a philatelic history very similar, you could take up Swaziland, which had its first set of stamps at the same time as Basutoland, but Swaziland has not only perforation varieties, but also a lot of rather confusing shades.

Just a final word. Copies of the Postage Due stamps of Basutoland have been found with the watermark error, that is with the St. Edward's Crown, instead of the usual one. Have a look at your own copies. You never know your luck, and if you do find one of these varieties you have a stamp worth anything up to twenty pounds. Very nice, eh?

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## Q.E. KENYA SET FREE

This month I am able to offer Free to all genuine Approval Applicants the Six Values of Kenya, 5c. to 1/–, showing Queen Elizabeth and also depicting various animals. Send today for this fine set enclosing 2½d. for postage.

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Br. Empire: 100, **1/6**; 200, **3/6**; 300, **7/3**; 500, **15/6**; 1000, **45**/–. Triangulars: 10, **1/6**; 25, **4/6**; 50, **10**/–; 100, **30**/–; Rly. Engines: 15, **1/6**; 25, **2/6**; 50, **5/6**. Maps: 10, **1/6**; 25, **2/9**. Ships: 10, **1/3**; 25, **2/6**. Postage 2½d. extra. All current British Colonial mint stamps in stock, including Coronation stamps and all new Elizabethan issues. Lists on request.

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**13 Lupton Cres., Sheffield 8.** Shop: **346 Abbeydale Rd.**


*For other Stamp Advertisements see also pages 160 and xviii*

# Stamp Gossip

### PORTUGAL

To know Portugal is to love it. That is the comment I heard from a friend recently, when I remarked that in these days this tight little country was producing some very beautiful stamps. Well, I must admit that I love its stamps, and have always done so. In my own collection I have several stamps that I have bought in Lisbon when I have called there in the past, and I prize them very much. And now Senhor Carlos Barradas of Covilha, an *M.M.* reader, has kindly sent copies of the set issued on 15th October to commemorate the People's Education Plan, which is a campaign against illiteracy. I am asking the Editor to illustrate one of these.

This reader also enclosed two copies of the set issued to commemorate the 150th Anniversary of Business Secretaryship. These are beautiful and without a doubt the Portuguese Mint is turning out stamps of which Portugal can be proud. According to Senhor Carlos Barradas the design is based on a work modelled by John de Silva. The Ship of State depicted symbolizes vigilance and prudence. Yes, collectors of modern Portuguese stamps are getting some very nice specimens for their collections in these days.

### USED OR MINT

It's all a question of taste. Some prefer used stamps and others mint, and all that really matters is which you personally prefer.

The other day I got a letter from a reader who said that he noticed that I often selected used copies for illustration, and did I prefer them thus? The fact is that I don't very much mind whether a stamp is mint or used, as far as the stamp itself is concerned, but there is a reason why I try to show nice used copies sometimes. That is because they are generally postally used and not cancelled to order, as are many that we see so often.

Stamp collecting would have been better described as stamp hunting. It is the chase that provides the fun, and one gets a great thrill when a postally used copy is unearthed that is scarce in this form.

I know of one old collector who is trying to get a full postally used collection of all those "States" sets of Venezuela. In fact, I know of two, and between them they have getting on for three hundred copies and while they have a long way to go yet, great has been their fun already. And it is by this type of collecting that one learns just how scarce a stamp may be.

### THE MIDNIGHT SUN

There is a belief among collectors that the many handsome stamps that Russia issues are never used postally. Now it is true that most of the used Russian pictorials on offer are merely cancelled to order, which makes a pukka used copy such as the one illustrated all the more welcome when it turns up. I took the one illustrated off an envelope myself. A certain company has a lot of correspondence with Russia, and sometimes I am given a cover.

### UNCLE SAM

Our big western ally is changing its definitive stamps, and while the U.S. may issue a lot of commemoratives, which we would greatly miss if it ceased to do so, it is not often that there is any change in the ordinary stamps. However, at long last all the definitive set is being altered. We get the "Presidents" once more, but in a quite different guise, and there is a decided improvement in those that have appeared to date. They are inexpensive, and easily come by in a used state, so no doubt many Meccano collectors will be gathering them as they come out.

But see that only nicely cancelled copies are obtained. And why not mount them singly and give some details, under—or over—each stamp, of the life of the President depicted? Then even non-collectors will be interested in your collection, which they will never be if you merely stick the stamps in some printed album.

### CUSTODIAN FORCES

Indian troops who acted as custodian forces, along with others, in Korea came in for a lot of praise for their deportment and general conduct. No wonder then that they were again selected to carry out the same duties in Cambodia, Laos and Vietnam, and no doubt they will again earn our gratitude. I say our gratitude, for they are doing this work on our behalf as well as for other people.

And now once more Mr. E. R. Kooka has kindly sent specimens of the Indian stamps that have been overprinted for the use of these troops. Five stamps of the Archæological set have been overprinted in Hindi, for each of the three countries where the troops are stationed. The top line of the overprint in each case is the same, but the second line gives the name of the country—the one illustrated is for Vietnam.

### WHAT SHOULD I COLLECT?

I frequently get letters from young collectors who cannot quite make up their minds what to collect from the huge sea of stamps, though they are anxious enough to start.

I remember one old collector remarking that a collector who could not make up his mind as to what he wanted, didn't really want to go in for stamps at all. My reply was, "Nonsense." Just pick up a copy of a general stamp catalogue, and note the thousands of stamps listed. How can one wonder at anyone new to the hobby not knowing just where to start? Anyhow I am always pleased when I hear of some young philatelist who has realised how hopeless it would be to try and get together a worth while general collection.

I got a letter recently from a Yorkshire reader, who stated that he only collected Queen Elizabeth stamps of about six colonies, and that all he had available to spend on stamps was 2/6 a week. Now this was going to the other extreme, for there is not enough scope for anyone only taking QE stamps of six colonies. It would be much better to go in for all colonies, up to 6d., and to add the higher values later.

**"Arcadia" and "Iberia"**—(*Continued from page 113*)

comprise an observation lounge which occupies the full sweep of the deck beneath the bridge with large windows looking forward as well as to each side; an air-conditioned dining room; nursery; library; two writing rooms; drawing room; dance floor; verandah cafe; and pool cafe.

In the Tourist Class, cabins are for two, four or six persons and the public rooms include a dining room, lounge, smoking room, nursery, verandah cafe and dance floor. For all passengers there are shops, hairdressing saloons, ironing rooms, letter-bureaux and swimming pools. Cinema shows are held in both First Class and Tourist accommodation.

Apart from all this, each ship can carry over a quarter of a million cubic feet of cargo. Roughly half of this is in refrigerated compartments.

As one may expect, the victualling of such ships is a big job. A glance at a typical store sheet will confirm this. It includes 41,452 lb. vegetables, 28,000 apples, 35,000 oranges and 5,000 grapefruit. Also a little further down the list, 97,200 eggs and 16,800 lb. of granulated sugar (as well as 8,960 lb. sugar, cubed).

Before the *Arcadia* and *Iberia* sailed on their maiden voyages 18,000 plates, 32,000 glasses, 7,000 breakfast cups and 4,500 saucers were placed aboard each ship. On arrival in Australia they are victualled again and upon return to this country storerooms are replenished and breakages replaced. With this amount of china aboard perhaps we can discern just one little reason why the P. and O. Company were the pioneers in the fitting of stabilisers to big passenger ships.

**The 1955 Paris Fashions**—(*Continued from page 116*)

water from a "whirling arm" garden-spray. Nothing could be simpler or more efficient, and the Djinn hops around with the agility of a dragonfly.

There is no space to tell you about the other aircraft that will be seen at Le Bourget in June—the big 107-seat, two-deck Breguet Deux-Ponts transport; the shapely little Fouga Magister jet trainer which may be adopted by all NATO air forces; the Norvigie air observation post; or the range of single and two-seat lightplanes, powered by converted Volkswagen motor-car engines, that young Frenchmen are building in hundreds at home. But I hope to attend the flying display, and will tell you of the last-minute surprises that the French Aircraft Industry is certain to produce from behind the hangar doors marked "Defense d'entrer".

**Parachute that Packs Itself**—(*Continued from p. 129*)

time as the parachute is ejected rearwards by a spring-loaded piston. Either three 4 ft. dia. 'chutes or one 7 ft. or 8 ft. dia. 'chute can be used, and they are pulled back into the telescopic tube by an electrically-driven winch after use.

The Napier Railton racing car, which is powered by a 450 h.p. Napier Lion aero engine, has proved to be an ideal vehicle on which to test the new 'brake parachutes, without the expense and difficulty of fitting them to an aircraft. It is able to get up to 140 m.p.h. quite easily on the long runway at Dunsfold, and there could be no better demonstration of the efficiency of the new 'chutes than to see the way they slow down this 4,500 lb. car in a very few seconds and then pop themselves neatly back into their container ready for the next test.

**Pipe-line over the Rockies**—(*Continued from p. 147*)

Hope, where the pipe-line is only 210 ft. above sea level; it maintains the pressure in the pipe from there to the Vancouver terminus at a safe level by means of a battery or relief valves, which would allow oil to escape if the closing of a valve against the main line flow by accident raised the pressure. These pressure limiting stations saved a considerable sum by making it unnecessary to provide piping with specially thick walling.

An interesting feature is the use of scrapers to keep the pipe-line working at full capacity. These are necessary because the Alberta crude oils are waxy in character, and there is a tendency for the wax in them to congeal along the pipe wall, especially in the coldest weather. The scrapers are made of rubber and are called "pigs". There are traps at intervals along the line where the pigs can be introduced when required, and these are propelled through the pipe by the moving oil itself.

## AN INTERESTING PAINTING COMPETITION

Readers who are fond of drawing, painting or modelling, and are "good at animals", will be interested in an attractive Competition announced recently by Spratt's Patent Ltd., the well-known dog and game food makers.

The Competition is open to entrants of all ages, and is in three groups: (1) for competitors over 18 years of age on 30th September 1955, the closing date of the competition; (2) over 14 and under 18 years of age on that date; (3) over 11 and under 14 years of age on 30th September next. The main prizes in Group 1 are 100, 50 and 25 guineas respectively, and in each of the other two groups 50, 25 and 12 guineas. There are also 300 Consolation Prizes. In Group I there will be 100 such prizes in the form of Book Tokens value one guinea each. There will also be 100 Consolation Prizes in each of Groups II and III. These also will be Book Tokens, which will be to the value of 10/6 each.

The entry can be either a drawing, painting or model, and must show a dog, puppy, or a scene *with a dog or dogs as the principal feature*, and must be the competitor's own work. There are certain restrictions as to size, and particulars of these and of the other conditions of the Contest are given on the entry form, which can be obtained on application from Spratt's Patent Ltd. (Dept. S/AC), 41-47 Bow Road, London E.3.

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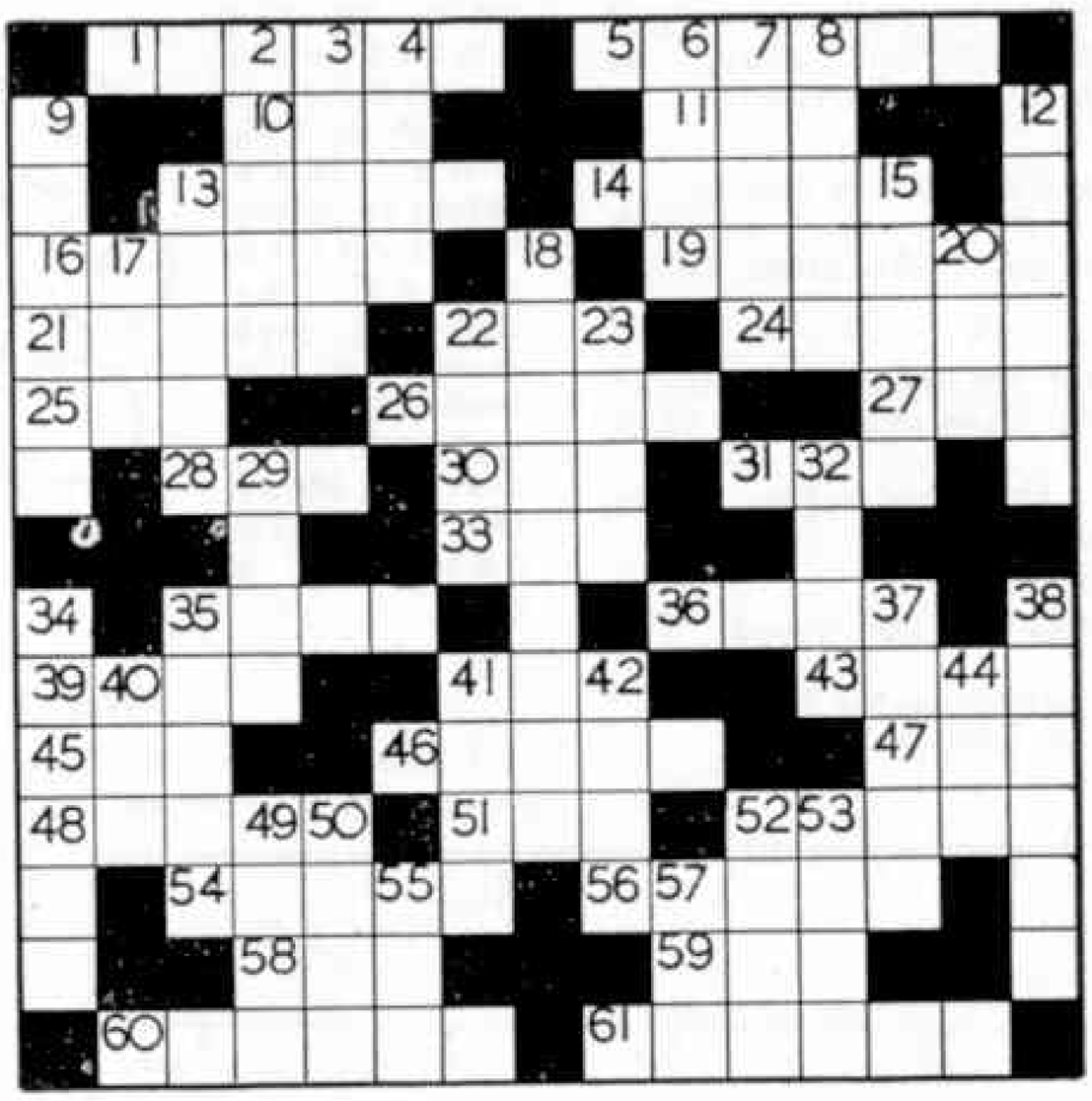
# Competitions! Open To All Readers

*Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.*

## An Interesting Crossword Puzzle



**CLUES ACROSS**

1. Once lived in Britain
5. Bird
10. Part of a wheel
11. Snake
13. A drop
14. Pertains to a city
16. Rotary cutter
19. Worse than fear
21. Led peasants revolt (Richard II)
22. Large
24. Life with the ———
25. Allow
26. Dish
27. Small
28. Near stern
30. Possessive pronoun
31. Lair
33. Small measure
35. Colour
36. Bird worshipped by Ancient Egyptians
39. Calm
41. Help
43. Foreign currency
45. Tear
46. Single seed
47. Female religious devotee
48. Greek letter
51. Printing term
52. Lump
54. Famous conference held here
56. Goddess of tillage and corn
58. Large continent
59. Small deer
60. Crime
61. Town in Italy.

**CLUES DOWN**

2. Dirt
3. Ship
4. Eastern title
6. Death
7. Unusual
8. Supplies milk
9. Move violently
12. County
13. Island
15. Head adornment
17. Can be focused
18. Interested in the past
20. Singular
22. A fishy item
23. Core
29. Not to pass
32. Bad
34. Perplexing situation
35. Flower
37. Bone cavity
38. No naked lights here
40. Liquid
41. Size
42. Could be a record
44. Cricket term
49. Pull
50. In addition
52. Harvest
53. Tilt
55. Spank
57. Age

Here is another of our popular Crossword Puzzles. As usual, there are no traps in the clues, or alternative solutions, and every word used, apart from names, can be found in a standard dictionary.

There are two sections in this competition, for Home and Overseas readers respectively, and in each prizes of 21/–, 15/– and 10/6 will be awarded for the best solutions, and there will be a number of consolation prizes. If necessary the judges will take neatness and novelty into consideration when making their decisions. Do not cut out the diagram, but make a careful copy of it, and when you have solved the puzzle write your full name, address and your age on the back of your entry.

Entries should be addressed *March Crossword, Meccano Magazine, Binns Road, Liverpool 13.* The closing date of the Home section is 30th April, and of the Overseas section, 30th July.

## Aeroplane Drawing Contest

For our second competition this month we give readers who are fond of drawing another opportunity of showing their skill in this art. The subject chosen is Aircraft, which can be of any current type, and the machine can be shown on the ground or water, as the case may be, or in flight. Drawings may be in colour, but competitors must remember that it is the drawing itself on which the judges will base their decision.

There will be separate sections for Home and Overseas readers, and in each of these prizes of 21/–, 15/– and 10/6 will be awarded in order of merit, with consolation prizes for other good efforts. Each competitor must state what aircraft his drawing represents, and must write his full name, address and age on the back of his entry.

Entries must be forwarded in an envelope or wrapper addressed to *Aeroplane Drawing Contest, Meccano Magazine, Binns Road, Liverpool 13.* Closing dates: Home Section, 30th April. Overseas Section, 30th July.

# Fireside Fun

"I've taken up song-writing."
"Sold anything?"
"Oh, yes, my bicycle, fountain-pen and wrist-watch."

* * * *

Little Teddy was taken to church for the first time. When the choir entered all dressed in white, he tugged at his father's sleeve. "Look quick, Daddy," he whispered. "They're all going to get a haircut!"

* * * *

He had been waiting a long time for his lunch.
"Waitress," he said, "must I sit here until I starve?"
"Oh, no," replied the waitress. "We close at six o'clock."

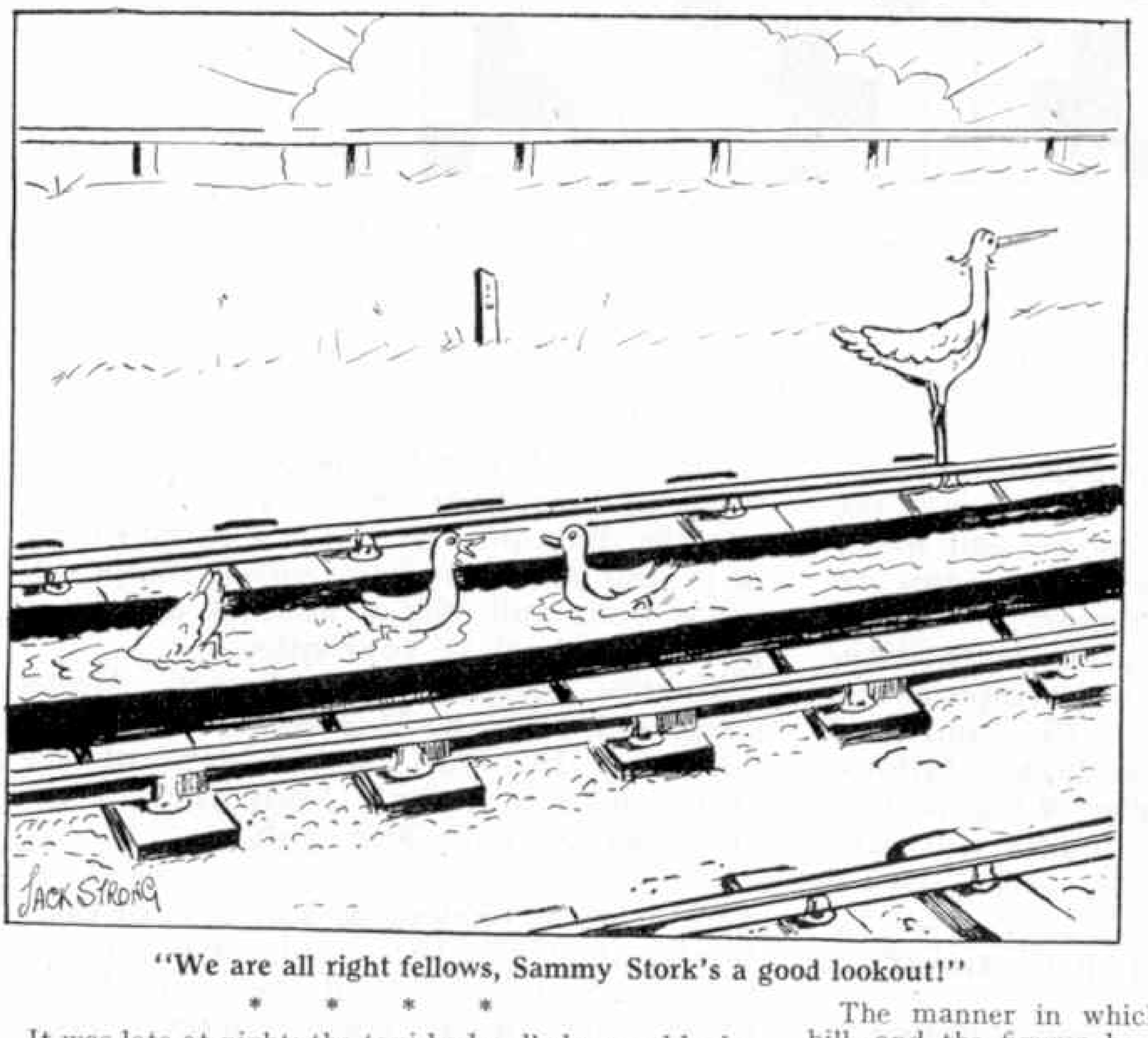
* * * *

"I think you had better fetch the manager," sniffed the customer. "Perhaps he will have more sense than you seem to possess."
"Oh, he has, madam," was the tired reply. "He went out as soon as he saw you come in."

* * * *

Teacher: "Tell me who wrote on the board, 'The teacher is a fool'."
Little Jimmy (trembling): "Please teacher I wrote it."
Teacher: "Well, I am glad you told the truth."

* * * *




**"We are all right fellows, Sammy Stork's a good lookout!"**

* * * *

It was late at night; the taxi had pulled up suddenly and the man from Aberdeen got out and began fumbling in his pockets. Finally he handed the driver a coin.
"I've known folks to give a bit over," grumbled the taxi-driver.
"Ay," responded the Aberdonian. "That's the reason I asked ye tae stop under this lamp."

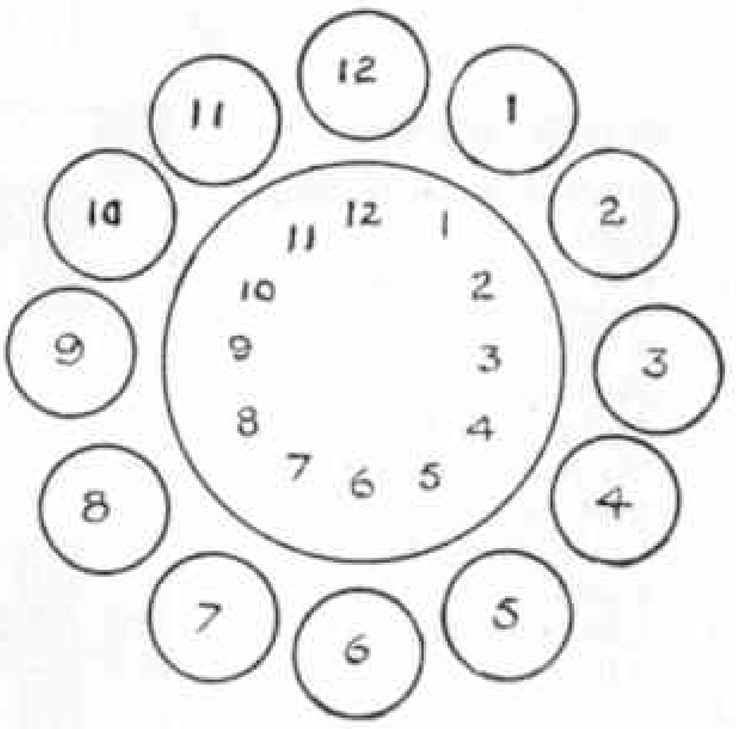
* * * *

Instructor to new worker: "I'm putting this rivet in the correct position. When I nod my head, hit it with your hammer."
That is all he remembered until he woke up in a hospital.

## BRAIN TEASERS

### A COIN PUZZLE

Take 12 pennies and arrange them in a circle as shown in the diagram below. Now take up one penny at a time, pass it over two pennies and place it on the third penny. Take up another single penny and do the same thing, repeating the process until after six moves the coins are arranged in six pairs in the positions numbered 1, 2, 3, 4, 5, 6. You may travel in either direction round the circle at each move, and the two pennies jumped over may be either two separate coins or a pair.




* * *

### WHAT AM I?

I possess large cities, yet not a single house or street lamp. My seas do not hold water, and there are no fish in my dry rivers. You would not think me graceful or beautiful, for my shape is quite irregular, and yet in your eyes I represent the whole world! What am I?

* * * *

### JUMBLED TRAINS

Each of the following groups of letters represents the name of a British Railways express train. Can you sort out the letters and name the trains?

1. ELODGN OAW RR
2. BTANHLIEAZE
3. LYARO OTCS
4. IGFYNL NASMTOCS
5. ERHNCMTA ENVERURT
6. THOMUOBNREU ELELB
7. AMNDSBORA
8. HINSORC VIREIAR

* * * *

### SOLUTIONS TO LAST MONTH'S PUZZLES

#### Find The Birds

The two birds' names hidden in the clues given are RAVEN and EAGLE.

* * * *

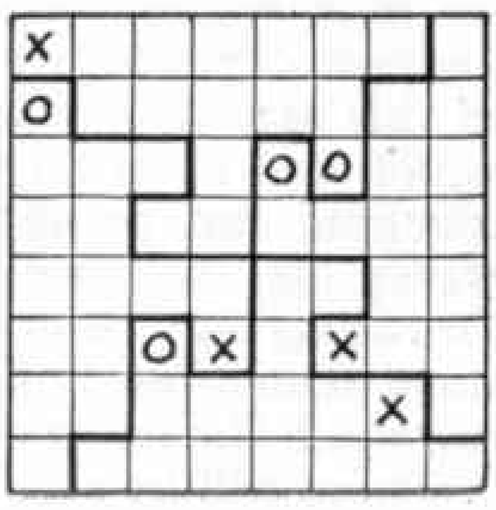
#### Figure This Out

The manner in which the dentist made out his bill, and the figures he used, were 1 2 3 4 5 and 6 which should be read as: 1 tooth, Ree, for 5/6.

* * * *

#### The Diagram Puzzle

The correct method of cutting the diagram into four equal parts, each of the same shape and each containing one star and one circle, is shown by the heavy lines in the diagram alongside.



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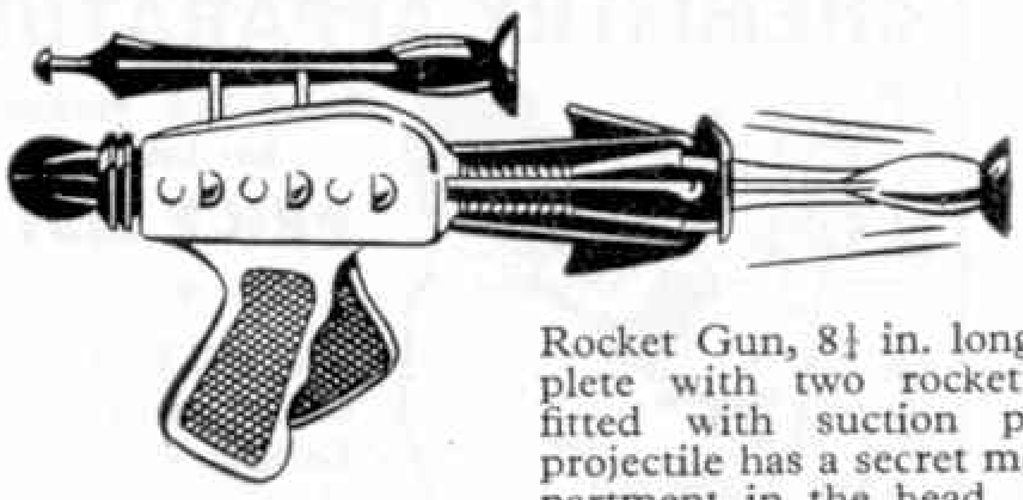

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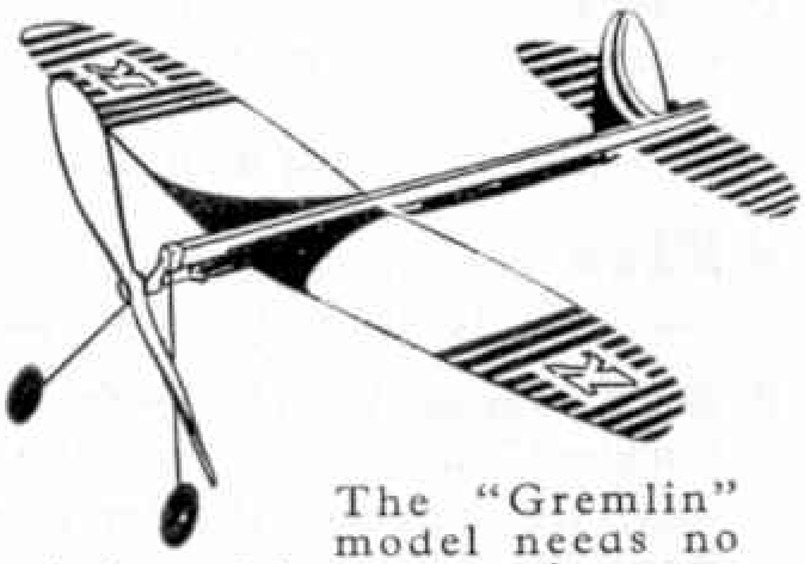

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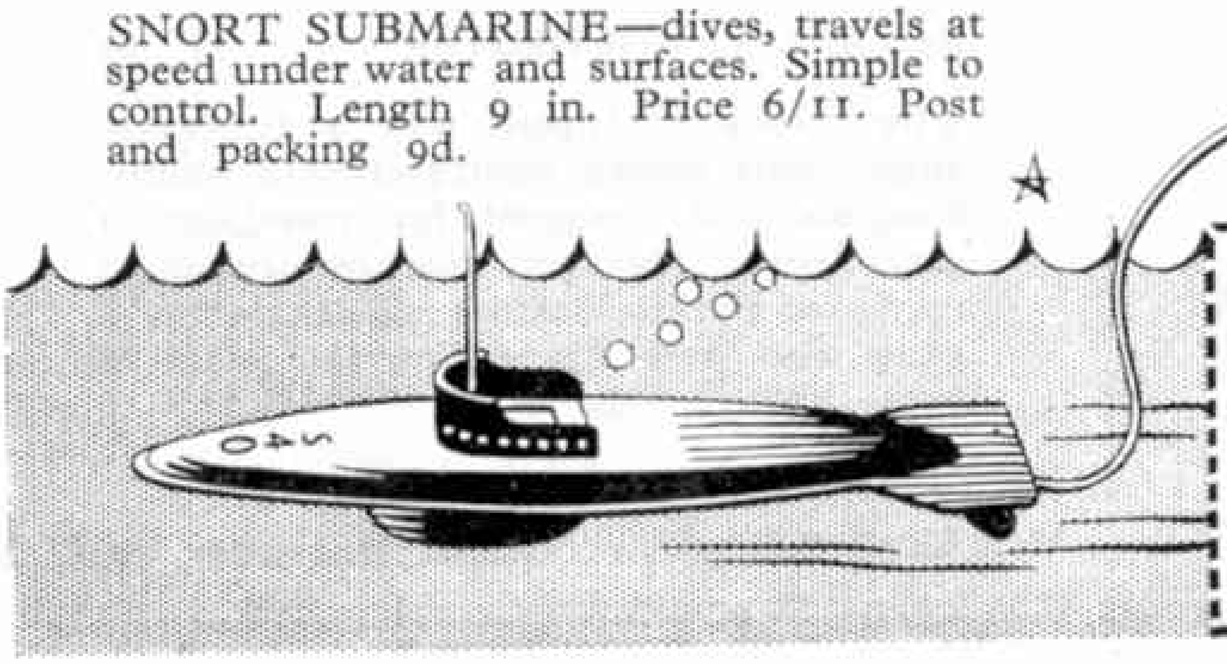

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**2 *How*** much cord is there in the 'backbone' of an ordinary Dunlop car tyre? Is it (a) nearly 10 yds, (b) nearly 2 miles or (c) nearly 500 yds.?

**3 *What*** is the World's Land Speed Record that was set up on Dunlop tyres in 1947? (a) 257 mph. (b) 394 mph. or (c) 427 mph.?

**4 *When*** did the first British jet aircraft take off? In 1919, 1937 or 1941?

**5 *Who*** won the World's Professional Sprint Cycling Championship three times running —(a) Sid Patterson, (b) Reg Harris or (c) Ken Joy?

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(1) c. (2) b. (3) 394 mph by the late John Cobb in his Napier Railton. (4) 1941—on Dunlop tyres. (5) b. Scoring: 10 marks for every correct answer. 50—top of the class. 30-40—Good. Below 30—Smarten up there!

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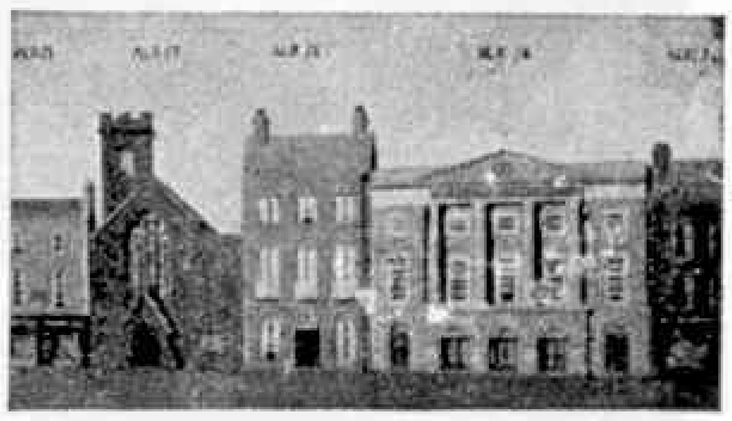

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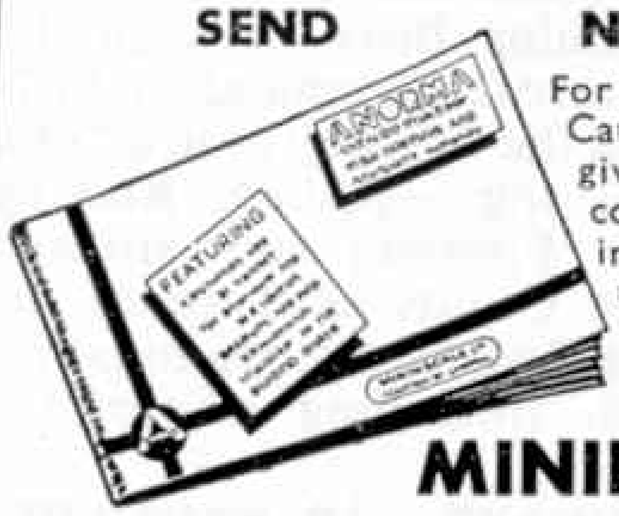


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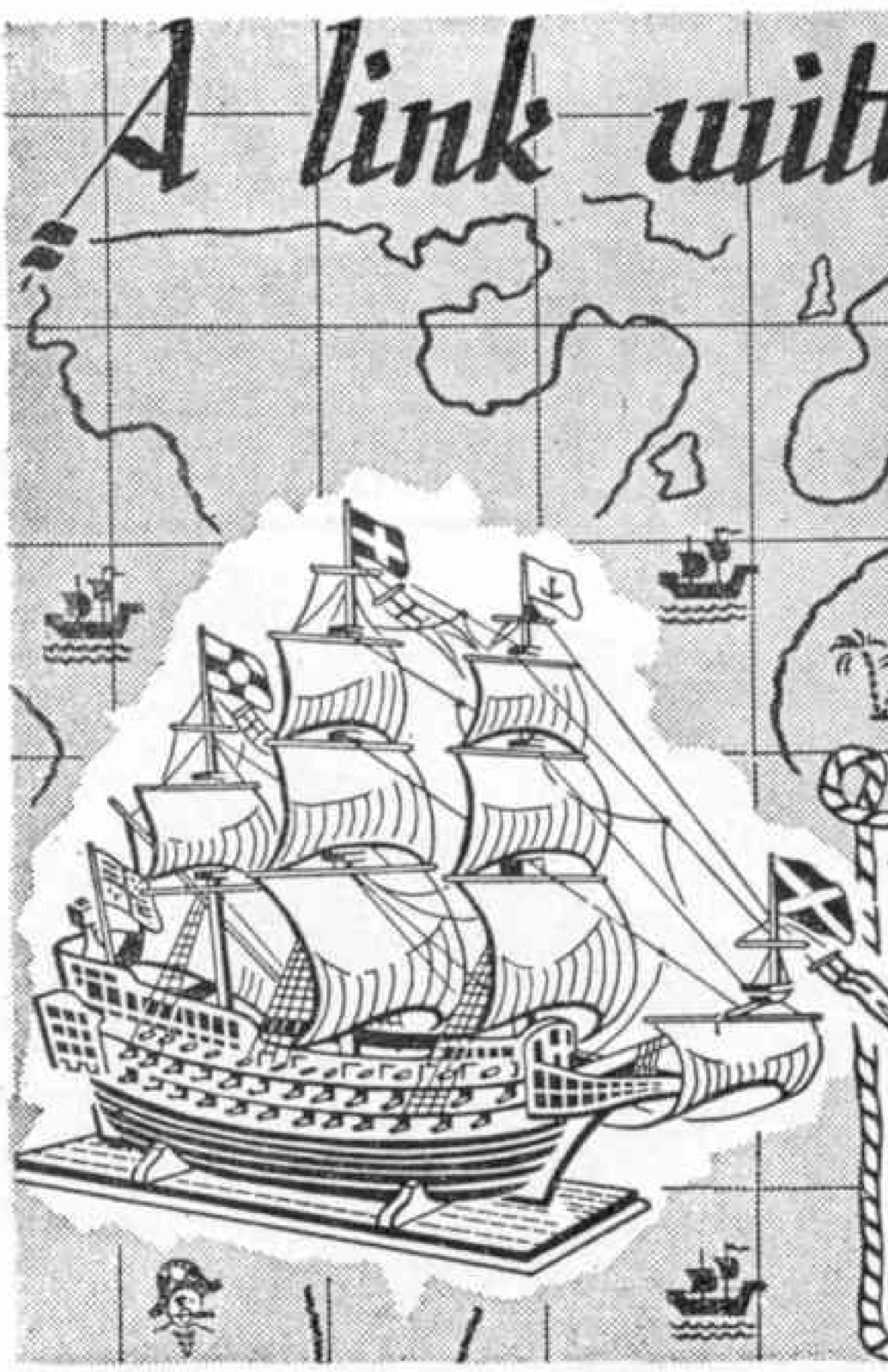

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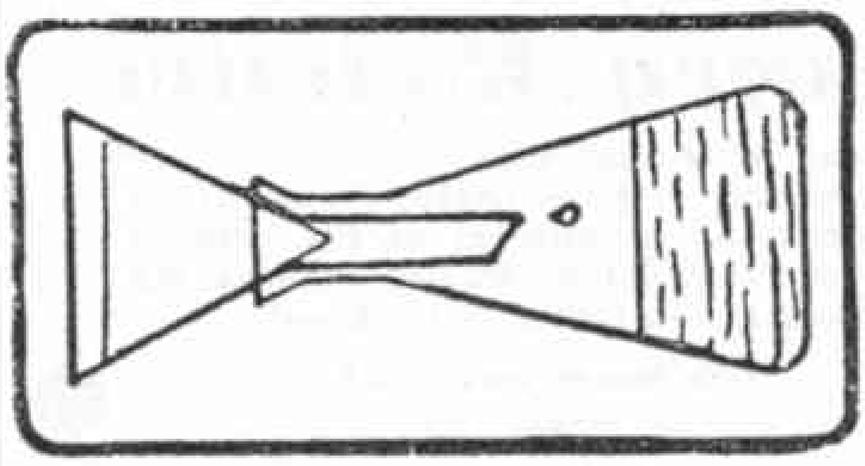

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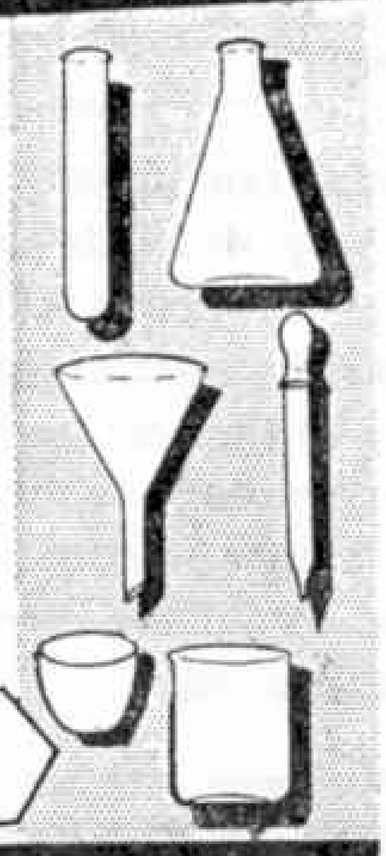

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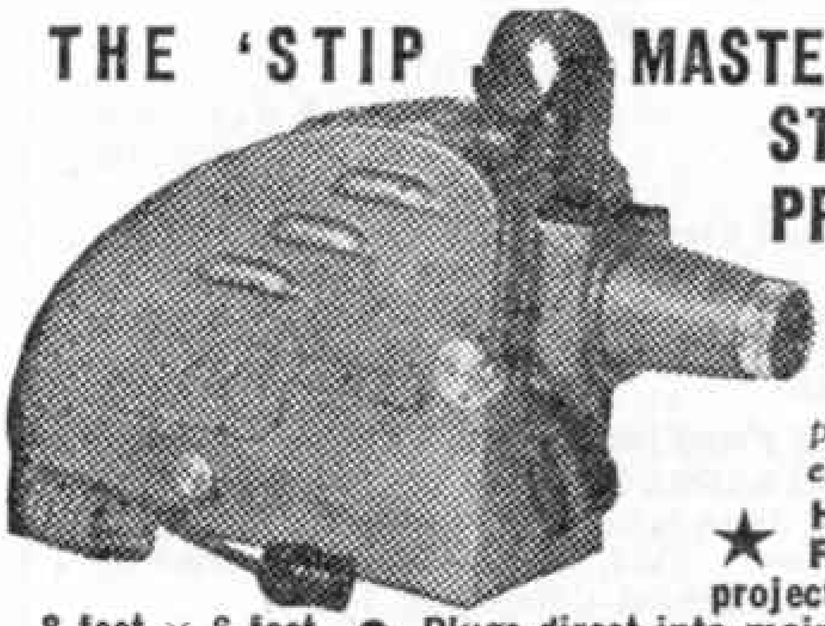

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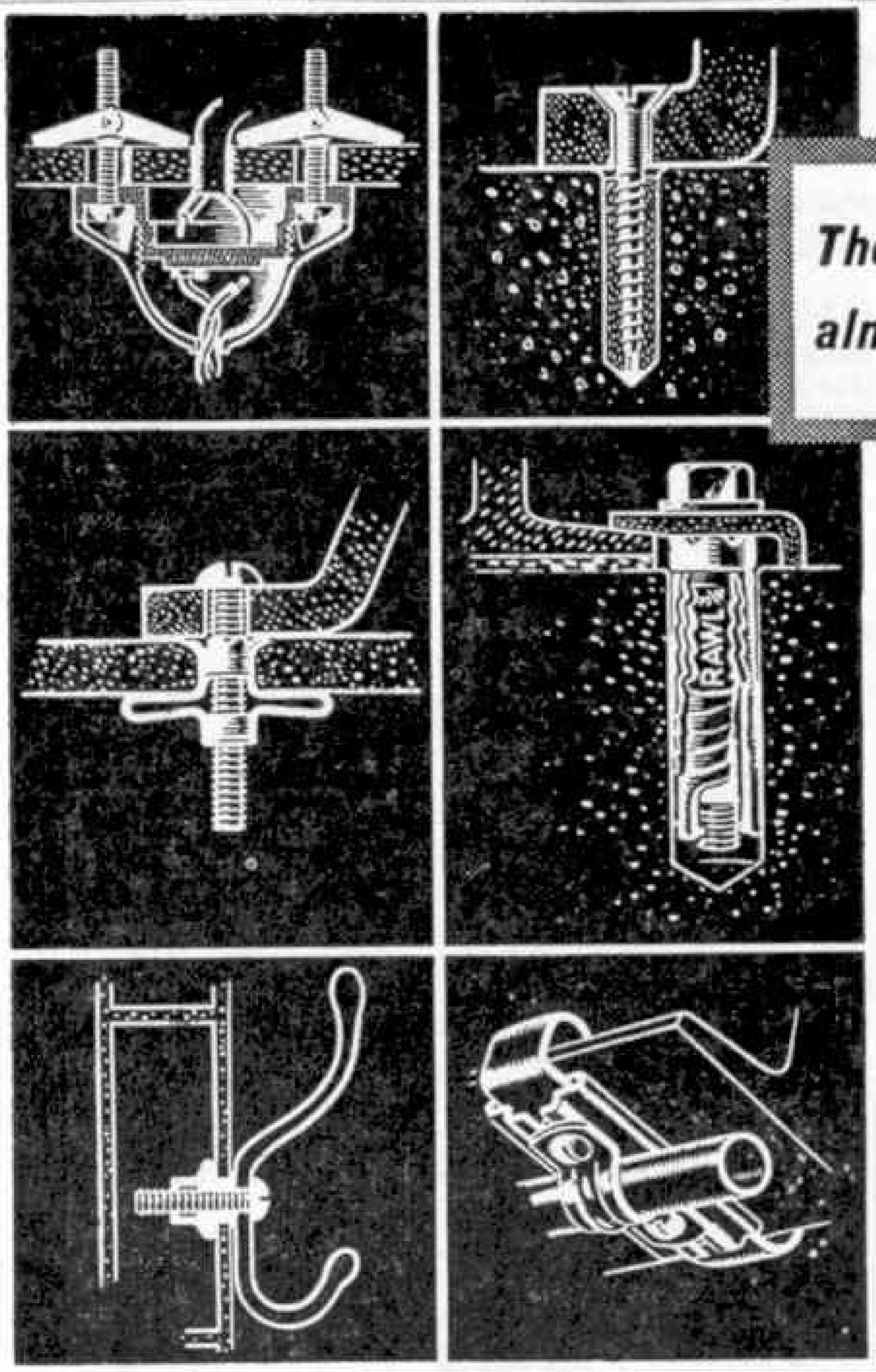

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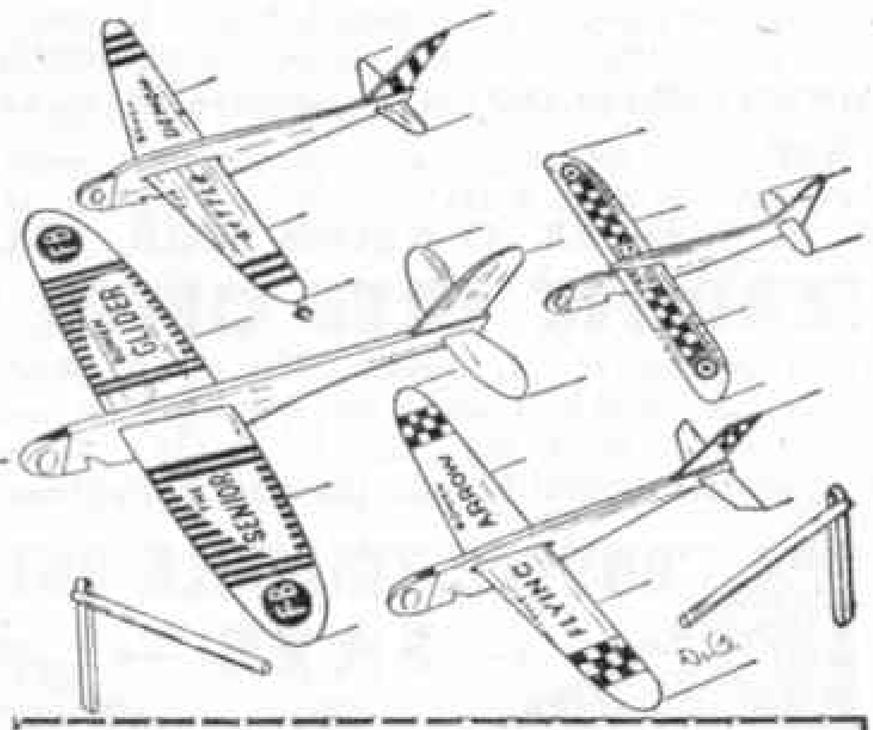


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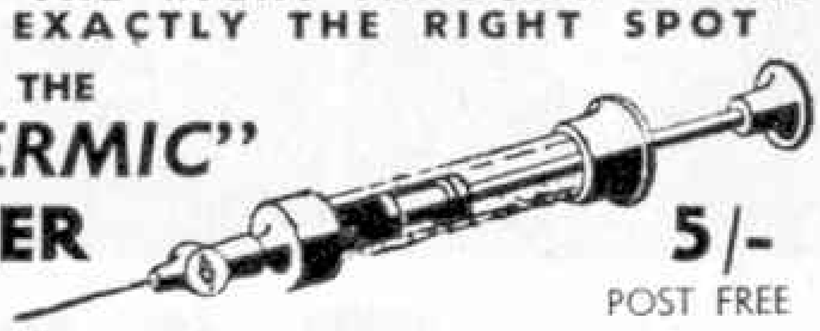

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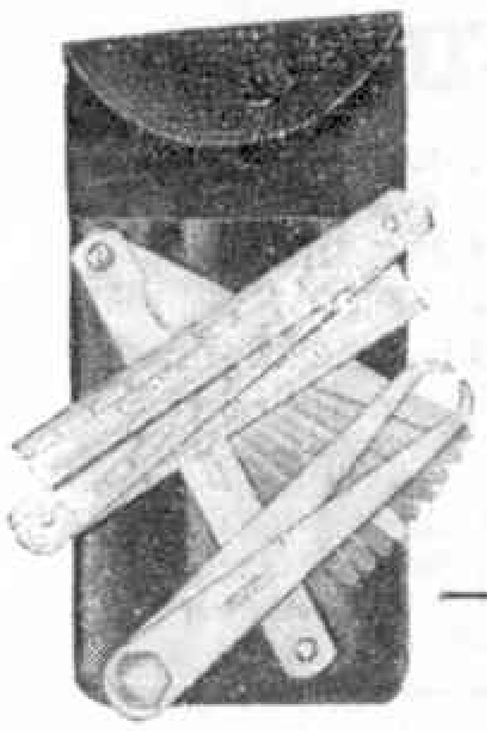

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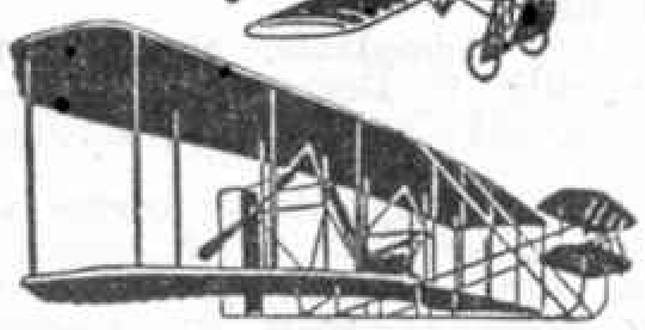

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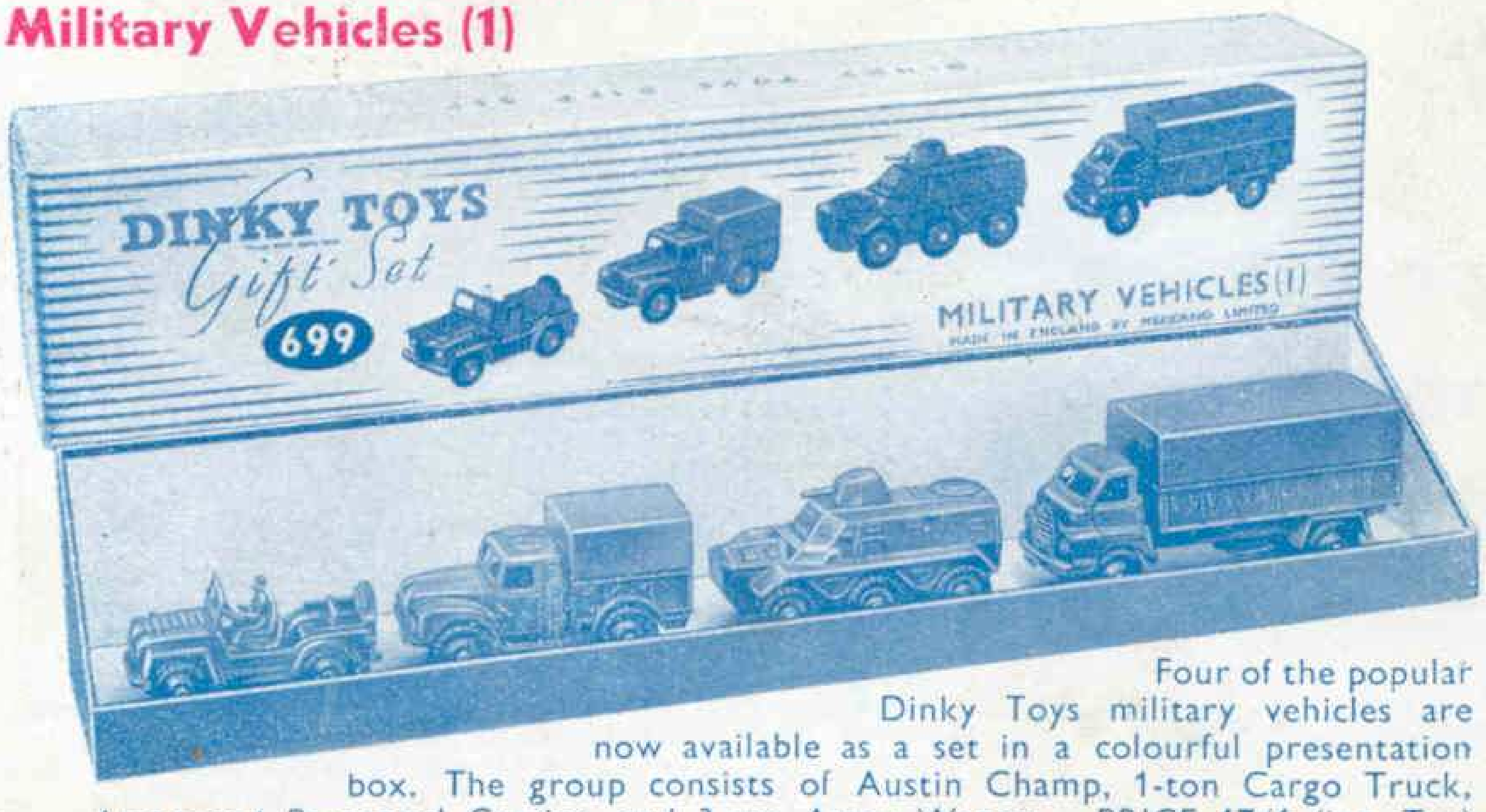


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